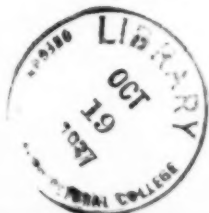


AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful



OCTOBER 15, 1937



Sorbaria Arborea

Social Security Tax Ruling Reversed
Shade Tree Fertilization
Display Gardens Draw Customers
Native Plants of Garden Value

AMERICAN NURSERYMAN

Chief Exponent of the Nursery Trade

F. R. KILNER, Editor

Published Semi-monthly by

AMERICAN NURSERYMAN
PUBLISHING CO.

508 S. Dearborn Street,
Chicago, Ill.

Telephone: Wabash 8194

New York Office—67 West 44th Street
N. L. Huebsch Tel., Murray Hill 2-4871

Entered as second-class matter December 14,
1933, at the post-office at Chicago, Ill., under
the act of March 3, 1879.

SUBSCRIPTION PRICE, \$1.00 per year; out-
side United States, \$1.50. Single copies, 10c.

ADVERTISING RATES on application. Forms
close on 10th of month for mid-month issue
and on 25th of previous month for first-of-
month issue. If proofs are wanted, copy
should be on hand one week earlier.

EDITORIAL communications on subjects
connected with nurseries, arboriculture or
other phases of commercial horticulture are
welcomed by the editor. Also articles on the
subjects and papers prepared for conventions
of nursery associations.

AN ORGANIZATION JOB.

If the nursery industry needed a demonstration of what a trade organization can do, the reversal of the internal revenue bureau ruling with regard to the application of the social security act to nursery labor furnishes it.

When the ruling unfavorable to nurserymen was announced last January, the industry was dismayed. But what could be done? Protests are usually unavailing in a matter of that kind, unless backed up with convincing evidence. The burden of proof is on the complainant, and a severe burden it is.

The matter was considered vital, so vital that at the July convention of the A. A. N. the Washington representative plan received new impetus when its first object was set as a reversal of the social security tax ruling. Funds came in from members of the industry faster than before, but still not in any rush — the goal has not been reached yet.

In the meantime, that good old stand-by, the American Association of Nurserymen, went to work through its legislative committee and Washington contact committee. Their members were experienced in the ways of the national capital and went about their work, to present convincing evidence to the persons qualified to change the ruling. The activity of one or two sectional organizations provided additional support from congressmen.

The job was accomplished by volunteer workers, nurserymen whose time

The Mirror of the Trade

is as important in their own business operations as anyone's, and the incidental expenses were small. The saving to the nursery industry is estimated at \$600,000 this year, and would be more in subsequent years. If the A. A. N. had that one year's savings as an endowment, its financial worries would be a thing of the past. But it does not ask an endowment, only membership by nurserymen at dues much less than their social security tax would have been. On the face of the record, it would seem that any nurseryman would serve his own interests to the best advantage if he did his part to maintain an organization which functioned as this has done in a crisis.

WINTER PROTECTION.

Landscape nurserymen can earn the good will of their customers by giving suggestions at this time of the year for the protection of evergreens exposed to the north wind or to excessive drafts around the corners of houses. The burning of evergreens is largely due to the drying effect of the wind and the inability of the roots to supply moisture fast enough in their almost dormant condition during winter.

One method of protection is a screen on the windy side. A stake may be driven on each side of the plant and a piece of burlap stretched from one stake to the other. Although the result is not attractive to look at, it is worth while if it prevents a specimen evergreen from becoming an eyesore the following summer. Another method is to obtain branches of pine or spruce and place them around the evergreen to be protected, tying them in place if necessary. Holes may be punched in the ground around the evergreen and the cut branches of pine or spruce stuck into the holes, the soil around them being stamped down firmly to keep them in place. This form of protection is more difficult to secure, but presents a better appearance.

Mulching also helps to keep evergreens in good condition over winter, if it is applied after the first heavy frost. Salt hay is one of the

best materials, but others may be used. Barnyard manure is excellent and can be worked into the soil in the spring to add to its organic content after its service as a mulch over winter.

SORBARIA ARBOREA.

With its large, spreading panicles of white flowers and attractive pinnate foliage, *Sorbaria arborea* is a delightful shrub, much too little used. It is especially well suited for foundation plantings around large buildings, such as post offices, schools, hospitals, court-houses, etc., and as a background in shrubbery plantings. However, because of its spreading habit, it should be kept away from slow-growing and choice plants, as it is likely to crowd them out.

The tree spiraea, as this sorbaria is often called, gets this name from its sometimes tree-like growth and spiraea-like clusters of flowers. The branching white plumes are often a foot long, presenting a showy display in July or August, and if the old flowers are removed, a second crop sometimes develops in fall. Although this shrub may reach to eighteen feet, it is always graceful and attractive, due to its long, pinnately divided leaves. Its beauty can be judged from the cover illustration. It grows best in a rather rich soil adequately supplied with moisture and is partial to some shade.

One of the hardiest sorbarias, the tree spiraea can be used along the Atlantic coast to Massachusetts, and variety *glabrata*, which has glossier foliage and which Rehder considers the handsomer form, has been growing in the Morton arboretum, west of Chicago, for over fifteen years. Occasionally it kills back there, but it has never been completely killed, and it blooms the same season despite this injury. Under these conditions, naturally, it rarely reaches its maximum height.

Propagation is simple, by the use either of hardwood cuttings or root cuttings. Old plants are divided readily, and seeds can be used to perpetuate the type.

IN PLANNING a landscape, preference should be given to existing growth where possible.

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[Registered U. S. Patent Office]

The Chief Exponent of the American Nursery Trade

*The Nurseryman's Forte:
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VOL. LXVI

OCTOBER 15, 1937

No. 8

Social Security Tax Ruling Reversed

***Consideration of New Evidence Submitted by Nurserymen Obtains New Decision
by Internal Revenue Bureau Allowing Exemption as Agricultural Labor***

Reconsideration by the social security tax unit of the bureau of internal revenue has resulted in a reversal of the ruling of last January which denied to nurserymen the exemption allowed agricultural labor under the act. Through congressmen at the nation's capital, the trade has been informed of the opinion of the chief counsel of the bureau of internal revenue that "upon consideration of the question in the light of new evidence presented" the term agricultural labor "should be given a broader interpretation so as to include horticulture and hence, in general, the labor employed by nurserymen should be included within the term agricultural labor as such is used in titles VIII and IX of the social security act, provided, of course, that such labor is performed 'on a farm' as such phrase is used in regulations 90 and 91. Accordingly, the above-mentioned ruling published as S.S.T. 73 is being revoked." The formal written ruling is in process of being prepared, embodying this finding, but probably will not be available for several weeks, when it will be published in the American Nurseryman.

Success thus has met the efforts of the Washington contact committee of the American Association of Nurserymen, supported by the trade at large and particularly by the East Texas Rose Growers' Association, through its attorney, Thomas G. Pollard, and Congressman Morgan Sanders, of Texas.

When the ruling denying nurserymen's exemption was published last January, officers of the American Association of Nurserymen immediately asked for further hearings. It was felt that the ruling applied to nursery-

men had been made without adequate information, based as it was on a ruling issued with regard to florists' labor. After the A. A. N. convention in July, several thousand feet of motion picture film was gathered, depicting operations in nurseries in various parts of the country, showing how purely agricultural is their character. From this film was prepared a motion picture, which was shown by members of the Washington contact committee to congressmen, senators and officials of the internal revenue bureau. Lester C. Lovett, chairman of the Washington contact committee which did so much work last year, was succeeded in that capacity by Clarence Siebenthaler when he had retired from the presidency of the A. A. N. The latter, with Paul Stark and Lee McClain, appeared before the officials of the bureau of internal revenue August 13. The reversal of the bureau's earlier ruling indicates their success in pointing out the fallacy of the earlier regulation.

Based on Florists' Ruling.

The ruling to which exception was taken was published as S. S. T. 73. The essential text of that ruling was:

In S. S. T. 72 it was held that services performed by the employees of commercial flower growers do not constitute "agricultural labor" within the meaning of section 907(c)1 of the social security act. The reasoning in that ruling is applicable in the instant case. In fact, the nursery and flower-growing trades merge into one another and frequently are carried on by the same individual as part of a single business. Consequently, for the reasons stated in S. S. T. 72, supra, it is held that services performed by employees of nurserymen do not constitute "agricultural labor" within the meaning of section 907(c)1 of the social security act.

The ruling referred to as S. S. T. 72, in regard to employees of commercial flower growers, contained some ingenious reasoning. Conceding that "the term agriculture in its broadest sense relates not only to ordinary farming, but to the tillage of the soil in general and in this sense includes horticulture in all its branches", it found ample authority for placing a narrower construction upon the term, by judicial decision and otherwise. Asserting "the construction to be placed upon the term must depend upon the purpose for which it was inserted in the act," the ruling declared that "agricultural labor was exempted from the taxes imposed by the social security act because of 'the difficulties in collecting the tax,' according to the report of the Senate committee on finance, inasmuch as farm labor is "of seasonal character" and "somewhat migratory in nature" and "employed in rural sections at a considerable distance from commercial centers." On the basis that "labor among flower growers is far more stable than in the case of rural farming" and that "flower-growing establishments are located in and near cities to a far greater extent than is true of ordinary farms", the ruling found "floricultural labor is much more similar to industrial labor than to farm labor." Hence it was held that "services performed by the employees of commercial flower growers do not constitute agricultural labor within the meaning of the act."

It might be added that the foregoing ruling relating to the employees of commercial flower growers is also disputed, and the Society of American

Florists is raising a fund, already in excess of \$10,000, to carry a test case into court if the efforts of the organization's legislative committee otherwise do not obtain a reversal of the ruling.

Reasons for Reversal.

It is obvious that there were good reasons for reversal of the ruling in the case of nurserymen. Their labor is as seasonal in character as that on any type of farm and employees are consequently also "somewhat migratory in nature". Nurseries are more frequently located in rural districts than in or near cities. There is no industrial character to be found in the nursery business.

The construction of a statute according to the purpose and intent of the lawmakers would seem to favor nurserymen. After the difference of opinion arose with regard to the interpretation of the term agricultural labor under the social security act, congressmen were informed as to the vagueness of such a phrase without close definition. In consequence, in the bill regulating hours and wages in industry which was passed by the United States Senate July 31, but died with the adjournment of Congress, agricultural labor was defined for the first time by the national legislative body. In that bill the following definition was given:

As used in this act, the term agriculture includes farming in all its branches and among other things includes the cultivation and tillage of the soil, dairying, forestry, horticulture, market-gardening, and the cultivation and growing of fruits, vegetables, nuts, nursery products, ferns, flowers, bulbs, live stock, bees and poultry, and further includes the definition contained in subdivision (g) of section 15 of the agricultural marketing act, approved June 15, 1929, as amended, or any other agricultural or horticultural commodity, and any practices ordinarily performed by a farmer as an incident to such farming operations.

To Whom Ruling Applies.

Until the full text of the ruling is received with regard to nursery employees, it is too early to say how far its application will carry. A proviso added "that such labor is performed on a farm as such phrase is used in regulations '90 and 91," may limit its extent. Articles 206 (1) of regulations 90 reads:

The term agricultural labor includes all such services performed—

(a) By an employee, on a farm, in connection with the cultivation of the soil, the harvesting of crops, or the raising,

feeding, or management of live stock, bees and poultry; or

(b) By an employee in connection with the processing of articles from materials which were produced on a farm; also the packing, packaging, transportation or marketing of those materials or articles. Such services do not constitute "agricultural labor," however, unless they are performed by an employee of the owner or tenant of the farm on which the materials in their raw or natural state were produced, and unless such processing, packing, packaging, transportation or marketing is carried on as an incident to ordinary farming operations as distinguished from manufacturing or commercial operations.

As used herein the term "farm" embraces the farm in the ordinarily accepted sense, and includes stock, dairy, poultry, fruit, and truck farms, plantations, ranches, ranges and orchards.

It may be held that a nurseryman who grows and sells his own stock is engaged entirely in agricultural operations down to the point of selling and delivering the merchandise to his customers. In the case of many nurserymen, it would seem that no other construction could be maintained under the above-quoted article of regulations 90. But where or when nursery transactions change from agricultural operations to commercial operations is a matter to be defined. Whether landscape planting is a part of the delivery of the stock when it is done by the nurseryman who grows it, is unsettled, though it might seem so. But by the same construction of the above article, the nurseryman who buys his stock would not obtain the agricultural classification.

Anyone with experience in income tax matters knows that the regulations are broad in character, and the finer points are settled by decisions in individual cases. The books of income tax rulings are voluminous, and before the questions involved in the application of the social security act are decided, the decisions will doubtless prove to be equally voluminous and require a long period of time for their promulgation.

Obtaining Tax Refunds.

While the ruling with regard to nurserymen was in dispute, many of them did not pay the tax, and if their operations entitle them to the agricultural definition, they owe no tax. Many other nurserymen paid the social security tax under protest. Whether protest was made or not, the taxpayer may obtain a refund, it is reasonable to suppose, in the event that the character of his employment is agricultural. Such refunds are constantly being obtained, when overpayment is made,

under the income tax law, and it seems that the same course will be taken under the social security act.

The new ruling will mean a saving of approximately \$600,000 per year to the nursery industry of the United States, according to a good estimate. Hence those who have accomplished this job in behalf of the industry feel that a real job has been performed, proving the valuable character of united effort through trade organization.

CENSUS OF FRUIT TREES.

A tree census just completed in the state of Washington reveals over 4,100,000 apple trees of all ages, over one and one-half million pear trees and more than a million prune and plum trees. Peach, cherry, apricot and nut trees totaled nearly 2,000,000.

In 1935 more peach trees were planted than any other kind of fruit. Plantings amounted to 43,696 trees. The Hale variety was planted in greatest numbers, as it has been since 1930. Previous to 1930, Elberta was the leading variety. A further decline in the number of apple trees, which reached a peak in 1920, is indicated by the fact that only 8.5 per cent of the total were under 6 years of age. This is not considered sufficient to maintain present numbers. The percentage of young pear trees also was found hardly enough to maintain numbers.

Delicious and Red Delicious trees combined were more numerous than any other variety of apple. Previous to the 1936 census, Winesap trees had held the lead, but last year there were 591,973 trees of the two Delicious varieties less than 10 years old and only 158,721 Winesap trees of the same age. However, in the age group 10 years old and older, there were 1,190,952 Winesap and only 848,596 Delicious and Red Delicious trees.

Over thirty-six per cent of all pear trees were less than 10 years old in 1936 as compared with twenty-one per cent of all apple trees. Bartlett pear trees constituted nearly seventy per cent of the pear trees, and the next important variety was D'Anjou, with slightly over fourteen per cent of the total.

The survey was conducted as a W. P. A. project and covered more than ninety-eight per cent of the total fruit acreage in the state.

Displays Draw Customers

*Succession of Shows and Garden Features Attract
Thousands to Grounds of Portland Nurseryman*

When A. B. Lambert left Shreveport, La., where he had been engaged in the nursery business with his brother, he started the Lambert Gardens at Portland, Ore., nine years ago, with an idea not then so readily accepted in this field as it is now. He believed that if department stores could profitably make large investments in show windows and their maintenance, a nurseryman should be able to sell his merchandise more readily by attractive display. So he began to turn section after section of his thirty acres, formerly a spinach patch, into what now resembles a concentrated city park of high order. His idea proved so successful that last season his staff reached a total of forty persons. He estimates that between May and August about 50,000 visitors saw his display gardens.

Trees, shrubs, herbaceous perennials, annual flowers, bulbs, lawn—all the things a home owner wants to adorn his grounds—are shown. Landscape features are presented, such as a Spanish pool, an Italian court and the court of the rose festival queen. During the annual rose festival at Portland, the queen of

the event and her princesses take part in ceremonies here. Incidentally, the description in the local newspapers draws attention to the Lambert Gardens, and for days thereafter motor traffic is especially heavy in that direction.

The display gardens attract enough attention that admission is charged. A sign in front reads: "Lambert Gardens—a paradise of flowers. Children under 12 free if accompanied by parents. Only 25 cents to see a \$2 flower show. Your money refunded if you are not delighted." Mr. Lambert plans his gardens so that there will be scarcely a break in the succession of flowers through the season. The show of tulips annually attracts throngs. Not long after roses take their place, and so on.

To save the time of guides, many questions visitors might ask are anticipated in the inscriptions seen on the premises. One of the signs explains the purpose of Lambert Gardens: "To demonstrate the culture of flowers, shrubs and plants. To give ideas on good landscaping. To show, as each unfolds, the choicest blooms of plants and shrubs. To reveal conditions under which flow-

ers, shrubs and plants grow best. To please lovers of the beautiful." Large green inconspicuous metal markers carry the names of every flower, shrub or tree grown in the gardens. Inconspicuous signs request, "Kindly do not walk on lawn," and slate flagging is used throughout to indicate to visitors where they may step.

In addition to planting garden displays that will attract the public, Mr. Lambert makes it easy for customers to buy. A reception room and sales office are provided at the entrance. A special structure is handy for taking orders for roses for shipment at the proper time. A sales garden toward the rear is large and contains a wide variety of stock, ready for customers' selection.

Pretty nearly everything in the horticultural line is offered. In the sales office at the entrance are a rack of flower seeds, a good line of pottery, trellises and garden furniture. Landscape service is offered, and what Mr. Lambert has done in his own grounds recommends him to patrons. Moving big trees is another service of importance he has developed. The extent of the business Mr. Lambert has built up has quite successfully



Spring Display in the Grounds of Lambert Gardens, Portland, Ore.

proved his belief in display as an effective means of selling nursery stock.

AUTUMN ROSE DISPLAY.

If the nurseryman can provide customers with a bountiful display of rose blooms in his show grounds in autumn, he can immediately sell many bushes. The New York Botanical Garden for several years has successfully presented an autumn display of rose plants in bloom, and the method, described by P. J. McKenna, may provide hints for others, though local conditions require varying procedures.

Hardly has the first flush of June bloom spent itself when preparations are begun for the second display of hybrid tea roses, which begins about mid-September and continues until ended by frost.

The immediate task is that of maintaining the plants in health and vigor throughout the trying hot months of July and August. The heavy June crop of flowers, the subsequent and almost continuous production of bloom during the summer and the attacks of insects and diseases place such an exacting drain upon rose plants that, unless measures are adopted to maintain their vitality, the roses will become so weakened from the struggle to survive that the fall crop of flowers will be almost negligible.

One of the most important operations during the entire growing season is the control of insects and diseases. Aphis are the most troublesome, but these can be effectively controlled by applications of nicotine sulphate and whale-oil soap. Fungous diseases are controlled by a prepared sulphur dust applied methodically once a week. This is used principally to combat black spot and mildew.

Immediately after the flowers of the June bloom have faded, the growths that have flowered are cut hard back. About the beginning of July a program of summer feeding is launched. Alternate applications of tankage and liquid cow manure are given at weekly intervals. This feeding is continued until the middle of August. About midseason, or toward the end of July, the plants receive one application of acid phosphate to give the blooms good substance and color. This is usually applied to coincide with a rain, failing which it is necessary to water it in.

Continuous cultivation and stirring of the soil are practiced, and every

effort is directed to keeping the roses in a thrifty growing condition. Not the least of the operations performed in the rose garden is the constant removal of all spent blooms.

All operations that tend toward the stimulation of growth cease about October 1. After this date, the plants are allowed to flower as they will. The more flowers produced at this season, the better are the chances for ripening of the canes before winter, thus insuring well matured wood for next year's growth.

After a killing frost, plants that have grown tall during the season have their tops reduced to within about two feet of the ground. This prevents their being whipped about by wind and having their roots loosened in wet soil. The final operation consists of hilling up around the base of the plants with gritty soil as a protection against repeated freezing and thawing.

"TWIGS."

A misconception of many who are not experienced in advertising—and of some who are—is that success with mailing pieces is in proportion to the handsome appearance, fine paper, color and expert printing which compose it. They overlook the vast amount of material printed on cheap paper, from big metropolitan daily newspapers to grocers' handbills, and the fact that these media must have been successful or they would not survive to the extent they do.

If a nurseryman says that does not apply to this field, he would do well to study the means taken by a Los Angeles nursery firm to contact its customers and prospects. Once a month, Peck & Wadsworth, 8541 West Third street, Los Angeles, Cal., send out two or three mimeographed sheets, usually on colored paper of the quality usually employed for mimeographing of the better grade. But it is no ordinary job of mimeograph work. Sketches and cartoons liven the pages, and some of these appear in red ink, while the type is the usual black. The title of this monthly organ is "Twigs" and it is now in its second volume. In its first it was called "Extra Profit".

When the name was changed the following happy explanation was given of the title:

Twigs are important to trees. Upon them are grown buds and later the blossoms. Peck & Wadsworth's policy in all work is to exercise particular care to insure

quality work. Like twigs, the little precautions and safeguards of quality work are important to beautiful results.

As in all advertising, ideas are the important thing, not the ways in which they are clothed. And "Twigs", in each issue, carries ideas to the owners of trees and those who may wish to plant them. At the proper time, suggestions are made for fertilization, spraying, pruning and other forms of tree maintenance. Occasionally the page carries lengthy discussion of an appropriate topic, such as cause of the dropping of immature fruit of the Oriental persimmon, or the plant disease *Armillaria mellea*, oak root fungus. Miss Kate Sessions' talk at the July meeting of the Southern California Horticultural Institute was summarized in the following month's issue of "Twigs". Each issue catches attention in a different way, presents timely ideas and affords the reader useful information.

The business that "Twigs" helped to build was described by L. Virgil Wadsworth in the August issue when he told how a year previously he and Keith N. Peck decided to build a business devoted to the purchase, sale, moving and maintenance of trees. He continued:

This month, the business is one year old. It has been a year of achievement because a singleness of purpose has dominated every move we have made. It has been a successful year. But if we are to be true to our pledge, there is still much to be achieved.

When we launched the firm of Peck & Wadsworth, which now has more than 100 employees, we declared that we would bring to the tree business a new high standard of ethics. We have only begun the long task of faithfully performing the task we have assumed. But we are happy in the pursuit of our objective and are encouraged to know that both clients and creditors of our company approve our policies.

1. To recommend needed work only to those who seek our counsel.
2. To perform assignments only during the season when such work should be done.
3. To do the many necessary, but hidden things, that distinguish dependable tree work from work done to meet a price.
4. To ask a fair price, consistent with the quality of work.
5. To safeguard the properties of our clients so that no liability may attach to them during the performance of our work.

THE mistake of mounding soil around the base of a tree is one of the commonest made by home gardeners. Nurserymen should make it plain to their customers that by this practice they only promote the development of fungi.

Landscaping For Frisco Fair

Planting of Island Being Constructed in San Francisco Bay for the Golden Gate International Exposition Will Cost Over Million Dollars

While the engineers are busy with the filling of land for the island which is being constructed in San Francisco bay for the Golden Gate International Exposition and with the construction of buildings, Julius L. Girod, Emery A. LaValee and John McLaren—chief, assistant chief and advisor, respectively, of the exposition bureau of horticulture—are actively engaged in plans for the planting features of the 1939 exposition.

Preparation of the soil for the landscaping is the first consideration. Salt must be leached from the seabottom soil, water systems installed, many thousands of yards of loam placed over the sterile sand, fertilizers thoroughly mixed in and an endless number of sprinklers located. One hundred thousand cubic yards of rich loam will be required, all of which must be brought by barge, for a top-dressing on the sand foundation. The leaching of the salt from the sand is necessary so that the entire planting area of 400 acres, to a depth of several feet, will be receptive to plant life.

Plans for landscaping call for the expenditure of \$1,300,000 for this part of the exposition to create the sand wastes of Yerba Buena shoals into Treasure Island. It is Mr. Girod's plan to have a continuous display of blooms from the early bulbs and spring-flowering trees on through the seasons with the wide variety of blooms which is available for such a showing.

The displays will be arranged in the various courts which have been laid out between the buildings. Many of the specimen trees and plants for the exposition are being donated. More than 4,000 trees will be transplanted. Of these, some 700 will be mature, ranging from twenty-five to seventy feet in height. More than 70,000 shrubs and 200,000 perennials, 250,000 annuals and 200,000 bulbs will be needed for the beautifying of this man-made island.

Beautiful by day, the gardens will be equally lovely at night with unusual lighting effects.

Washingtonia robusta and *Phoenix*

canariensis palms are to be set in natural groups along the roadway leading from Yerba Buena island to the exposition site. A 25-acre Persian prayer rug, fashioned from growing flowers, will greet the visitor on his arrival. This living carpet of flowers will face the Golden Gate. From there the visitor will come to the central court, where magnolia trees will be used. In their season Japanese azaleas and Shasta daisies will be used.

Irish yews will line the pool in the south court, with weeping willows at each end. In the recesses will stand two large madronas transplanted from Spring Valley lakes.

Spring will find lilacs in bloom along with rhododendrons. The list of flowers here calls for delphiniums, violas, *Solanum Wendlandii*, ageratum, lobelias, *Vinca minor*, thalictrum, cinerarias, hyacinths and forget-me-nots.

Sixty evergreen live oaks, each weighing twenty-five tons, were boxed at Stanford University for shipment to the grounds. Forty-eight will be set in the corners of the south garden. In the center of this court an octangular fountain will be surrounded by colorful orange trees with their fruit. These trees are now being prepared for shipment from southern California.

The list of bulbs calls for all the early spring blooms.

Another thoroughfare will be El Camino de los Padres, the Highway of the Fathers, a roadway lined with olive trees. Here will be the flowering trees—peach, cherries and crab apples. Weeping willows, cut-leaf weeping birches, rhododendrons, tamarix, French and German hydrangeas and Japanese irises will also appear here.

Nurserymen from the southern part of the state are furnishing orange trees, leucadendrons, strelitzias, *Eugenia myrtifolia*, bougainvilleas, begonias, dombeyas, daturas, hibiscus and other tropical shrubs. Treasure Island will be ornamented with seven courts, but the "true love" of Mr. Girod and Mr. LaValee is

the court highlighting shades of red. It is called the east long court. Paul's Scarlet roses will be used in profusion. Pools will be edged with a 3-foot border of scarlet flowers. Another court, the north square court, will be done in yellows and oranges.

The nursery for the exposition was started a year ago. It will take the work of a large staff of skilled gardeners and landscape engineers and twenty acres of special nursery tract to develop the Golden Gate exposition landscaping project. This nursery is located in Balboa park.

Six huge yew trees are being transferred from the Lindenwood estate, in northern California, each weighing eighteen to twenty tons. They are over 80 years old and were imported from Great Britain in 1857 by the late James J. Flood.

All of the plant material which is to be moved in from distant points will be handled by the bureau of horticulture. This division plans the best method of transportation from the collection points to the Balboa park nursery or to the exposition direct. In the moving of a large tree, detailed knowledge of the entire route to be traversed is necessary so that overhead wires and low or narrow bridges can be avoided. Booms of 69-ton capacity will lift the boxed specimens from their location to truck or freight car. Barges towed by tugs will transport cargo from shipping points to the exposition grounds, where trucks will bring them to their final location on Treasure Island. Many of these trees will remain on the island for airport beautification after the exposition closes, December 2, 1939.

Mr. Girod, who administers the affairs of the entire bureau of horticulture, is assistant superintendent of parks for the city and county of San Francisco. He is a protégé of John McLaren, having studied horticulture under him for twenty-one years in Golden Gate park's nurseries and conservatories. He is a native son, born and educated in San Francisco.

But the guiding hand of the entire

exposition landscaping bureau is that of 90-year-old John McLaren, superintendent of San Francisco parks, who created the world-famous Golden Gate park and the floral beauty of the 1915 world's fair.

PLAN GARDENERS' SCHOOL.

Announcement has been made by the Los Angeles board of education of a 2-year training course for apprentice gardeners. Coöperating with the Southern California Gardeners' Institute, C. E. Nihart and G. W. MacKenzie, of the vocational and practical arts department, will direct the project, for which approximately 100 boys will be chosen from applicants. Both federal and state funds will be available for subsidizing the program.

According to the present plans, forty hours of schooling will be required weekly, thirty-six of which will be spent in actual garden work and four in class. Apprentices will be paid on a sliding scale, which for the last six months will reach \$18 weekly. Upon graduation, the apprentice will have had 3,600 hours of practical work and 400 hours of technical study.

The program will be divided into four sections. First will come garden construction, including grading, building garden walls, steps, etc. Next will come maintenance, planting, spading and irrigating. Care of tools will also be included. Vital in Southern California, the problem of irrigation will be studied, including cultivation before and after irrigation, basins, drainage and underground and overhead systems.

In the classroom there will be correlated study of the technique of field and greenhouse practice and of the biology of leaves, flowers and plants, including their relationship to their environment.

Another phase of the work will include the collection of plants and their arrangement for study, including drying, mounting and labeling. There will be study of pests and pest control, propagation of cuttings, seeds and budding. Technical courses will include botany, utilizing the dried plant collection to illustrate lectures.

In the second phase of the work, apprentices will put what they have learned into practice as construction foremen in fields and lath houses. Such subjects as annuals, perennials,

succession of flower plants and treatment of potted plants will also be studied.

Fertilizers, their types and relationship to soil and plant varieties, will be studied in the more advanced third section. Related horticultural courses will include plant groupings for special effects, such as rock gardens, ferneries, etc.

Field trips will be made to local estates, with note taking for later analysis to determine the methods used to achieve definite effects. The care of citrus, avocado, fruits, roses, flowering shrubs, hedges and formal plantings will also be studied. Vines and their uses will be a separate topic for study.

The final section of the course of study will continue special project work, offering a practical working out of crop growing and the design of gardens, and will include studying and compiling lists of plants for specific purposes. Analysis of the criticisms of gardens visited will serve as a review of all subjects.

It is believed that this is a particularly fitting project for southern California, with interest in the development of beautiful homes and gardens paramount there. Exclusive residential districts will, it is felt, absorb into permanent employment many of the apprentices trained under the course as planned. The diversity of tastes represented by the gardens of southern California is almost equal to the number of nationalities found there, so that the possibilities for development of gardens are practically unlimited.

The need for experienced gardeners is real, it is said. With the restriction of immigration, the supply of gardeners trained in the exacting schools and apprentice systems of Europe and the Orient fell off. To plan, build and care for gardens and plants properly requires serious study and practice. It is believed that the course as planned will give to ambitious youths a background through which they can enter a field that will be both interesting and profitable, while filling a definite need in the horticultural life of the state. M. H. L.

LARGE APPLE CROP.

Though apple prices are lower than last year, the gross cash income of growers will probably be larger

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than in 1936 and the largest since 1930, according to the bureau of agricultural economics of the United States Department of Agriculture, because this year's crop will be one of the largest in the past decade, following one of the smallest on record.

It is interesting to note that since 1920 there has been no marked trend in apple production, although during the same period the number of apple trees was reduced thirty-five to forty per cent. The answer, of course, is a marked increase in total yield per bearing tree.

CATALOGUE OF NEW FRUITS.

A catalogue listing 117 new varieties of fruit most of which have originated on the grounds of the experiment station at Geneva has just been published by the New York State Fruit Testing Association with headquarters at Geneva.

The association, now in its twentieth year, coöperates with the experiment station in propagating and distributing stocks to interested fruit growers of the new fruits developed by the station plant breeders. A nominal membership fee entitles the grower to first choice of new stock grown by the association. The membership list now totals over 2,500 names, with representatives in forty-seven states and in many foreign countries.

The new catalogue which carries on its cover an attractive picture of the Gorham pear, carries brief descriptions of twenty new apples, two crab apples, ten cherries, four nectarines, thirteen peaches, two apricots, ten pears, seventeen plums, twenty-one grapes, one elderberry, two gooseberries, four black raspberries, four red raspberries, two purple raspberries and five new strawberries.

While most of these new varieties were bred and tested at the experiment station, among the number are a few sorts originated elsewhere which the station fruit specialists have tried out and found especially promising for the east. Also appended to the catalogue is a list of new fruits especially recommended for home plantings, as well as new varieties which the specialists believe are now worthy of planting on a commercial scale.

Native Plants of Garden Value

*Eighteenth in Series of Articles on Neglected Opportunities
for Nurserymen in Native Material—By C. W. Wood*

From the gardener's point of view the oxytropis species might just as well be astragalus or vice versa, for the distinguishing marks between the two genera are of little account so far as their ornamental value is concerned. Nor will the gardener be apt to be much interested in the controversy as to whether the plants covered should not be called aragallus. But the fact that many of these plants have definite garden value should interest all commercial growers. It is not likely, however, that they will ever be universally popular, for reasons which will be pointed out later.

First of all, they are not easily established, perhaps because of their long taproots and perhaps organisms which normally live on the roots may also have something to do with it. In any case, old plants resent disturbance, but seedlings which are handled without breaking their taproots present little difficulty. Commercial growers do not ordinarily offer seedlings to their customers; so some other method of handling must be worked out. They are quite amenable to pot culture for three months or so after germination takes place, and deep rose pots larger than plants of their size normally require might make it possible to carry them along without harm for as much as six months. The really good kinds deserve that much care.

The best known species in gardens is one of the loco weeds of western plains, *Oxytropis Lambertii*. It is a variable plant, its height running from three inches in material I have had from the Jackson Hole country to eighteen inches in plants from Missouri. The color is even more variable, the usual purplish shade running into numerous shades of red and pink, with an occasional pure white. This is a dry-soil plant, as are most of the species, though one meets exceptions at rare intervals, as in *O. deflexa*, which appears to do best in a moist situation. The silky leaves of our present plant warns us that it calls for perfect drainage. A plant with rose-colored flowers which came to me several years ago from northern Maine is showy enough to make its

way in gardens if it were made available. I suspect it is the *Aragallus johannensis* of Rydberg, which when put into Gray's Manual would be *Oxytropis campestris johannensis*. Nurserymen in northern Maine and adjacent parts of Canada should put the plant into circulation, for it is really worthy. Of the miniature kinds that I have grown I can speak well of the following: *O. triflora* (deep lilac flowers) and *O. montana* (light reddish purple), both growing about two inches high, and *O. ochroleuca* (yellow) which gets about four inches high. No doubt there are others among our native species that would repay searching them out.

Parnassia.

Parnassia, the grass of *Parnassus* of *Discorides*, is better known in literature than it is in gardens. The species, some two dozen or more in number, are of about equal garden value; so one need not look further than the nearest natural supply for propagating stock. *Parnassia palustris*, which is found naturally from the Atlantic to the Pacific and from the northern tier of states northward, is as good as any and has the advantage of hardiness over such forms as *P. asarifolia*. The genus is made up of near-bog plants, requiring constant moisture for their well-being. *P. palustris* is normally a 6-inch plant with pure white flowers over a tuft of heart-shaped leaves from June until well into September. Propagation is from seeds, which should be fresh, and by division.

Petalostemum.

The prairie clovers, numbering twenty-five or more kinds, are all American; all are interesting, and all that I have grown are decorative. Why they are not more often used by gardeners is hard to understand unless it is because of the fact that they are not moved easily while they are in bloom, and that is the time most gardeners want their plants. Like many other legumes, they have long thick roots, which are not easy to dig intact, and losses are therefore to be expected when plants are moved while in a vegetative state. Even the

largest roots may, however, be moved while dormant.

The prairie clovers demand little in the way of moisture, many of them being inured to hardships of that nature in their prairie and plains homes, and they can generally get along on a quite meager diet. Their finely cut leaves and interesting flowering habits, rather showy in most cases, make them good for borders, and the rock garden has not been forgotten, for there are a number of low-growing kinds.

The commonest prairie clover, *P. purpureum* (*P. violaceum*), is also about the dullest, though it deserves a place in the garden if its betters are not available. It makes 2-foot plants of usually glabrous leaves of three to five leaflets and purplish flowers from June to August. Where a white flower is called for, *P. candidum* is ready to fill the place with its 2 to 4-inch spikes of pure white flowers on foot-tall plants during June and July. Perhaps the best of the genus that I have grown is *P. villosum*, a plant of sandy places from Wisconsin west to the mountains. Its specific name indicates its character, its stems, its 13 to 17-parted leaves and even the cone of soft rose flowers being covered with gray green velvet in the form of soft hairs. And the character of the plant indicates its needs, which include, most of all, drainage so perfect there will be no hint of excess moisture around the silky foliage. All *petalostemums* that I have grown are easily grown from fall-sown seeds and are easily established if moved while dormant. The kinds named, and no doubt others, should make good material for plant growers.

Phacelia.

Just two perennial phacelias, *P. sericea* and *P. magellanica*, are known to me. The latter is a South American plant and, of course, has no place in a list of natives even though it has decided garden merit. *P. linearis* is also spoken of as being of perennial nature, but it behaves as an annual in my garden. *P. sericea* appears to inhabit alpine regions in the southern part of its range, but comes down the

mountain sides as it travels north. Seeds sent me years ago from our own northwest were labeled "from the summit of Mount Ranier," while some from northern British Columbia came from a canyon in the foothills. Its behavior in the garden tells us it is an easily grown alpine, an anomaly among western alpenes taken as a whole. It does well with me in full sun, though I suspect in really hot sections it would be better in dappled shade. In addition, it does not stand desert dryness and demands perfect drainage. Judging from experience with the plant covering several years, I am sure it can be grown without too much trouble over much of our eastern section. It makes a rosette of much-divided silvery leaves, which is ornamental enough in itself to justify its presence in a planting, and from this rosette spring 4 to 6-inch spikes of brilliant blue purple flowers with prominently exerted yellow stamens. It is easily grown from seeds.

Polemonium.

Aside from a few well known and well marked species, polemoniums are so confused in the trade and among collectors that one cannot tell what is apt to come from a packet of seeds. This confusion, although regrettable, is not to be wondered at, for botanists are far from being in agreement as to where one species stops and another begins. As an example, I have experienced a lot of fun and not a little vexation during the last few years trying to find again the plant I had years ago as *P. Richardsonii*. It was obviously not that species, for it was no taller than four or five inches, and the flowers, resembling those of *P. confertum*, except that they had some of the yellow eye of *P. elegans*, were the largest I have ever seen on a polemonium. This experience is mentioned to show some of the troubles one may expect to encounter when he starts out to find a certain kind of polemonium, but more to indicate the fact that in the genus exists material, much of it beautiful, which is totally unknown to the average gardener. If you have the time and the inclination to investigate, I know of few plant groups that will give you more pleasure and perhaps profit than the polemoniums. To get into the unknown or rather the confused area, be sure to include the ones marked *humile*, *lanatum*, *pulcherrimum*, *parvifolium* and *Richardsonii*, names which

mean one thing to some collectors and something else to others.

It is perhaps useless to give here an outline of the species as they are generally accepted by botanists. Let me assure you, though, that you will find few, if any, weeds in the genus. They are mostly of a good shade of blue, entrancing deep sky-blue in *P. confertum* and running through violet in one form of *P. elegans* to the purple of some of the *P. humile* varieties. Whites occur in some of the species, but these somehow lack the distinctiveness of the blues, and we find a lovely shade of pink in *P. carneum*. Yellows are known, but no really good plant of that color has ever come my way.

In the absence of definite information to the contrary, it is always safe to give polemoniums some shade in eastern states. Shade and a leafy soil in a situation that is not too dry seem to be the sum of their needs, though some protection from strong winds is desirable for the ones with the ferniest foliage. They are easily grown from seeds, which should be sown in autumn in an outdoor frame.

INSECT PESTS ACTIVE.

The principal insect crop pests are winding up an unusually active season by severely damaging many late crops and building up their numbers for next year.

Grasshoppers continue destructive from Illinois to southern Minnesota and southward to Missouri and Oklahoma and also in the great basin.

The European corn borer was reported to be heavily infesting corn in northwestern Pennsylvania. The borer was found to be still present in ten counties in southeastern Wisconsin this summer.

The codling moth—a pest which suffered from the cold last winter—is ending its season with large numbers from northern Ohio to northeastern Kansas. The flatheaded apple borer has proved destructive to apple trees from Indiana and Nebraska southward to Oklahoma and Missouri. In Ohio the oriental fruit moth is more numerous than for several years. This pest has become numerous also in Connecticut and has done some damage in northern Georgia and Mississippi.

The larch sawfly is at a low ebb in lake state forests. Virginia and North Carolina have had outbreaks of the locust leaf miner. The European spruce sawfly has increased alarmingly

throughout northern New England. The hairy chinch bug has damaged lawns severely in New York, Connecticut, Rhode Island and Ohio.

WINTER INJURY.

Of the damage done to ornamental plantings by weather conditions last winter, the most surprising is the enormous amount of injury to the dwarf juniper, *Juniperus communis depressa*, states M. T. Hilborn, of the Maine agricultural experiment station, for entire hillsides appear brown when seen at a distance because of the killing of this native plant formerly thought to be hardy. Among evergreens, the cedars and junipers suffered most. Pines as a group were relatively uninjured. Spruce and firs were all apparently uninjured. Yews and hemlocks varied widely. *Taxus cuspidata nana* was uninjured, while many plantings of *T. canadensis* were completely killed. *Tsuga canadensis* was completely killed in most localities, while *T. Sieboldii* was uninjured.

The lack of rain during the summer of 1936 apparently caused the plants to enter the winter in poor condition. November was cold and the ground froze early, permitting the late autumn rains to run off. The following three months were almost the warmest for any winter in Maine, while March brought subnormal temperatures, with cold dry winds, which no doubt were responsible for most of the injury.

SPRAYING AFFECTS SOIL.

Experimenters at Washington State College have proved that continuous application of poisonous sprays has literally impregnated many soils to an extent which makes it almost impossible to start new cover crops.

Fruit growers' frequent and heavy spray applications make them the first to feel the adverse effect of such chemical impregnation, but because the effect of the use of poisonous sprays seems cumulative in many soils, nurserymen and other growers of crops requiring spray protection also should be interested in research directed to a remedy for this situation.

GOLDEN oak scale is the cause of many dead twigs this autumn, particularly on white oaks. A dormant oil spray is recommended as a control measure, an application in autumn and another next spring being advisable.

Shade Tree Fertilization

Modern Methods of Applying Food Materials to Lawn Trees Include New Practices and Improvements on Old — By L. C. Chadwick

Organic and mineral nutrients have been applied to fruit and ornamental trees since the dawn of human existence. Some of our present practices follow closely those suggested in the earliest records of history. Others, including the distribution of fertilizers in the soil by means of compressed air and water and tree injection of nutrients, are truly modern methods.

It is not surprising that recent advancements have been made. A better knowledge of the movement of nutritive elements in the soil, coupled with a more thorough understanding of root distribution and their requirements for growth and functional behavior, is responsible for the adoption of the air, water and air-water methods of application. As a means of determining individual element deficiencies, and as a possible method for their correction, leaf and branch injections have proved to be commercially feasible. Entire tree injection with complete nutritive solutions may be a recommended practice of the not too distant future.

To develop a basis for the discussion of these more modern fertilization methods it will be well to mention a few facts about the older methods employed. Some reasons for success and failure with them will be suggested.

For purpose of discussion, fertilizer applications, in a broad sense, may be classified as (1) soil applications and (2) plant applications by spraying or injection.

Soil applications are made by (1) surface feeding, (2) trenching and (3) hole applications. The latter is meant to include post-hole, punch bar and injection, either by air or water methods.

Surface Feeding.

Surface feeding was one of the first methods employed and still has much to commend it under some conditions. It is especially useful as a means of partial feeding of shallow-rooted plants and in cases where the soil can be worked under the trees, such as those with low-hanging

branches and shrubby types. Working of the soil to incorporate the fertilizer has its advantages. Spading in a heavy application of manure reinforced with commercial fertilizers may be useful in increasing the organic matter as well as improving the general structure of the soil. Where necessary, unsightly conditions beneath the trees can be improved by the use of evergreen ground covers.

Since trees and shrubs are often growing in poor soil, composed of heavy clay from the cellar hole, to which have been added mortar, brick and other refuse, the incorporation of some humus will greatly improve the situation and provide a bed to which commercial fertilizers may be added later to advantage. Where such poor soil conditions exist, a better alternative to the above suggestion is the complete removal of the poor soil and replacing it with good soil. However, conditions seldom exist where this can be done profitably or to the satisfaction of the owner.

At least two serious objections to the surface method of feeding present themselves under general conditions. Since most of our shade trees are growing under lawn conditions it is impossible to work the soil beneath the trees. This means that applications must be made to the surface and watered in. Even if this is done, injury to the grass is apt to result if heavy applications are made. Wyman showed, however, that as high as fifty pounds of ammonium sulphate to 1,000 square feet could be applied to the lawn without injury to the grass if applications were made before growth starts in the spring. Up to fifteen or twenty pounds per thousand square feet were applied without injury after growth started. These tests were conducted on heavy clay soils. Such applications to other soil types might react differently.

The other criticism of surface application is the well known fact that some mineral ingredients are slow in penetrating the soil to depths corresponding to the majority of feed-

ing roots. Phosphorus is outstanding in this respect. Many agronomists have shown that phosphorus moves slowly in the soil and is usually held in the surface inch or two for considerable periods. With these facts in mind, it would seem that surface applications of fertilizers to shade trees should be limited to cases where it is possible to work the soil, as a partial feeding for shallow-rooted plants, and as a method of incorporating organic matter with which commercial fertilizers are mixed. This method of application has more justification as a means of feeding shrubby plants, as can be readily perceived.

Trenching.

Trenching as a method of feeding shade trees has little to commend it, except possibly as a method of stimulating a more fibrous root growth the year previous to transplanting. Severing the roots by the trench, which is refilled with good soil high in organic matter, aids the development of new fibrous roots. However, this shock, coupled with another when the tree is moved, may offset any advantages resulting from the first operation. At the best, it is an unsightly operation and only rare conditions exist where it could be practiced in general tree maintenance operations. As a means of draining surplus water to a lower level it may be useful.

Application Through Holes.

Feeding in relatively large holes made with a post-hole digger has been practiced, and it seems to me to be justifiable under certain soil conditions. In cases where soils are extremely hard, heavy or of otherwise poor structural condition, more can be accomplished in improving the soil condition for satisfactory root growth by adding humus than in any other way. It appears that more thought and attention can be paid to this method of soil improvement previous to any attempt to add commercial fertilizers. It may seem at first that such a small portion of the total soil area occupied by the roots would be involved that little good

would be accomplished. However, it would seem well within the realm of possibility to remove from one-fourth to one-tenth of the soil at a time. Such replacement with good soil would unquestionably be of considerable benefit and, if practiced through successive years, the whole area would soon be remodeled. Recapping the holes after the operation would obviate much of the unsightliness following such a method.

The punch bar method of feeding has been practiced for a long time and is possibly more universally used today than any other method. It has an advantage over surface applications in that the fertilizer is down in the portion of soil occupied by the roots. If the holes are placed reasonably close together, a relatively uniform distribution is secured. Some of the questions which might be asked regarding this method of feeding are (1) over how large an area should the holes be distributed, (2) how many holes should be made for a tree of a given diameter and (3) how deep should be the holes?

Distribution of Holes.

It is not so many years ago that diagrams submitted with trade literature indicated that these holes should be staggered around a circle underneath the outer spread of the branches. The theory behind this practice was the assumption that the majority of the feeding roots were located beneath the drip of the branches. There is ample proof that this assumption is fallacious. Perhaps we cannot go so far at this time as to make a definite statement on feeder root distribution, since considerable variation exists within genera, species and varieties. Evidence at hand is sufficient, however, to show that for many of the plants studied a large number of the feeding roots are well within the area covered by the spread of the branches, while others extend well beyond this area. The holes, then, should start within a short distance of the trunk, varying with the size of the tree, and extend well beyond the spread of the branches. If one wishes to be conservative, he can limit the holes to a radius in feet corresponding to the diameter of the trunk in inches. Within this area roots would come in contact with the fertilizer in all the holes while some

of those located beyond the spread of the branches might not be entered by the roots.

In an attempt to arrive at some conclusion of how many holes should be made beneath a tree in feeding, I should suggest that a general rule, to be modified as conditions necessitate, be ten holes per inch in diameter of the tree trunk. On this basis, if five pounds of tree food were used per inch in diameter of the tree trunk, one-half pound would be added to each hole. This practice should give a relatively uniform distribution.

The depth of the holes should correspond to the penetration of the majority of the feeder roots. This no doubt will vary a great deal depending on soil type and kind of tree. As a general statement, a depth of twelve to twenty-four inches would be ample for the holes.

Another angle to the question of depth of hole involves the possibility of changing the existing root depth by deeper placement of the fertilizer. Some who have studied this condition feel that fertilizing the surface layers of soil in regions where these have little or no available water during periods of drought would be distinctly detrimental to normal growth. Lower placement of fertilizer is more satisfactory.

Methods of making the holes consist of the use of a crowbar, soil auger, compressed air drill, electric drill, use of water and perhaps others which have not come to my attention. Economy of equipment and operation is perhaps the most significant factor in the actual making of the hole.

Regarding the movement of fertilizers in soils, some consideration should be given lateral movement of the nutrients when placed in holes. Little information is available on this subject, but it is reasonable to assume that it is less than vertical penetration when applied to the surface. This is probably especially true with phosphorus. It would seem then that the roots must come in contact or nearly so with the fertilizer. This is more reason for a large number of holes as suggested above. The fertilizer used may be in powdered or granular form or contained in cartridges. Cartridges are used as a means of conveying fertilizer by some concerns. The plant food is

in a concentrated and soluble form permitting slow diffusion.

There is some evidence to show that phosphorus and possibly potash remain in a more available form if they are placed in bands or masses. Since they are in an available form when applied, it is necessary to devise means of protecting them from too rapid fixation or revision to insoluble forms. By placing in bands or masses, or by the use of granular fertilizer, less surface is exposed to fixation and there is a greater concentration of soluble fertilizer at the areas of contact with the soil, thus enabling the fertilizer to overcome fixation, and a larger proportion remains in an available form for a longer period.

Aëro-fertil Method.

The use of air and water as means of improving soil conditions and as an aid in fertilizer distribution is a relatively recent innovation and has much to commend it.

The aëro-fertil method of tree feeding was originated by Charles F. Irish, of Cleveland. Briefly, the operation consists of using a pneumatic drill with a 1¼-inch auger. Holes are bored to the desired depth and frequency, usually eighteen to twenty-four inches deep and thirty to forty-eight inches apart. The air gun is placed in the hole, the throttle opened and the air emitted, fracturing the soil to as much as ten feet from the point of application. Then the air gun is removed, the fertilizer placed in the hole, the gun replaced and air emitted to blow the fertilizer through the fractured soil. Sometimes the holes are drilled deeper and placed in a row to drain surplus water off to a lower level. This method has been found to be a practical substitute for the use of dynamite in breaking up subsoil, making possible deeper rooting. An extension may be used on the air gun, enabling the operator to fracture the soil to depths of six feet.

Besides the benefit of the air in distributing the fertilizer, its influence alone cannot be overemphasized. It is impossible at this time to present a thorough discussion of the agronomic and physiological aspects of soil air on the growth of plants. May a few statements suffice.

Nightengale reports that plants in aerated cultures remove up to sixty

per cent more nitrate and ammonium nitrogen from the cultures than did those grown in non-aerated cultures. The influence of aeration on ammonium nitrogen absorption rates was much more pronounced than on the nitrate absorption rates. Undoubtedly oxygen requirements for salt accumulation vary greatly with the kind of plant, temperature, carbohydrate supply and other factors which affect the metabolism and the intake of salts by the root. The role of oxygen in respiration of the plant, its effect on aerobic and anaerobic microorganisms and other phases governing the production of soil toxins and nutrients are exceedingly important and worthy of considerable thought.

With these facts in mind, can anyone deny that the aëro-fertil method of feeding and rectifying soil conditions is the most important advancement in aboriculture in recent years?

Water Gun.

More recently a method of using water to make the holes and distribute the fertilizer has been devised. A type of water gun was developed at the Missouri Botanical Garden in 1933 and discussed by A. P. Beilmann. This pressure feeding gun consists of standard galvanized pipe fittings to which a soil rod is attached at one end and a funnel or hopper at the other. Valves regulate the flow of water and fertilizer. The soil rod is forty inches long, made of 1/4-inch pipe. Hose lines lead to a sprayer, which furnishes the necessary water and pressure. In drilling the hole, the soil rod is placed in contact with the soil and the stop-cock controlling the water supply from the sprayer is slowly opened. The water forced out of the tip of the gun drills the hole. After drilling, the water is turned off and the lever under the funnel is opened. The fertilizer is poured in, the valve is closed and the water is turned on again to force the fertilizer underground. Some of the advantages claimed by the designer consist of (1) ease and rapidity of operation, (2) a better diffusion of the fertilizer than accomplished by other methods, (3) the rapidity of diffusion prevents the concentration of fertilizer in pockets and (4) an effective impregnation of the soil. The ease of operation and effectiveness of such a gun would undoubtedly vary with

soil conditions. In hard clay soils drilling may be difficult, and the application of three gallons of water with each charge of fertilizer might result in water logging of the soil. Not all feeding is done at times when such quantities of water are necessary or desirable. Undoubtedly there exist, however, times when such additional quantities of water would greatly benefit the plant, resulting in greater stimulation of the tree growth than would an application of food in a dry state.

A number of other types of guns for liquid feeding have been used. They may consist of a soil rod, to which a hose from a power sprayer is led. The fertilizers are in solution in the sprayer and are forced through the rod into the soil under pressure. One of the criticisms of this method that have been raised is the excessive wear and corrosion on the sprayer. Other types of water rods are used

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ROADSIDES

THE FRONT YARD
OF THE NATION

By J. M. Bennett

Superintendent of Parks and Forestry
Board of County Road Commissioners,
Wayne County, Mich.

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to drill the holes, the fertilizer is applied, the rod is reentered in the hole, and the water under pressure distributes the fertilizer. In all of these cases little fracturing of the soil is possible as occurs with the aëro-fertil method.

The latest innovation in the forced feeding equipment is the combination of the air and water gun which was demonstrated last year by Charles F. Irish. With this method the holes are drilled with compressed air, as in the aëro-fertil method. The gun consists of a tube which extends into the hole, a cylinder into which lead the air and water lines, both controlled by valves, and a hopper in which the fertilizer is placed. After drilling the hole, the gun is inserted and the soil fractured; then while the air is holding open the soil fractures, the hopper is opened and the fertilizer is blown in by opening the air valve or the water valve. Three or four gallons of water to one pound of fertilizer are used. The water-air gun is used only when the soil is dry enough and of such a structure as to warrant it.

Here we have a method of feeding which includes all of the good features of the others without becoming too complicated to operate. Accomplishment of soil aëration, uniform distribution and ready diffusion of the fertilizer and the supplement of ample moisture result from a single operation.

Applications by Spraying.

Direct application of materials to plants may be by spraying or injection. In mentioning spraying it is my intention to limit any mention of it to applications of nutritional materials and not chemical substances which may prove toxic to plant pests.

Spraying as a means of applying nutritional material is confined largely to treatments to overcome certain mineral deficiencies. This method has shown considerable promise as a means of overcoming iron induced chlorosis of citrus trees. It has also been employed to correct iron deficiency in apples, pin oaks and other fruits and ornamentals with limited success. Frequent applications are necessary, and since other methods of treatment, such as direct injection and soil treatments, have been more reliable, spraying as a means of feeding has not played and

likely will not play an important role in northern arboriculture.

Tree Injection.

The earliest and greatest amount of work on tree injection has been in connection with means of devising a cure or prevention of certain entomological and pathological conditions in trees. Comparatively little has been done in this country from the nutritional standpoint. The possibilities in this field are great. The factors of soil and the movement of solutes from the soil to the plant can be eliminated by direct injection of fertilizer salts. If these do not prove toxic to the tissues or detrimental to the tree over a long period of time, but instead overcome mineral deficiencies and stimulate growth, tree feeding could be revolutionized by the practice.

Perhaps the most notable piece of work on this subject in this country is the bulletin of the New York agricultural experiment station, "Direct Tree Injection in the Study of Tree Nutritional Problems," by Collison, Harlan and Sweeney, issued in 1932. A number of points brought out in this bulletin show that the injection method of nutrition is very much in the experimental stage as far as a commercial practice is concerned. Dry salts injected in various methods, solutions under gravity from feeder bottles suspended above the place of injection and solutions under pressure have all been tried with certain serious limitations.

Absorption of the nutrient solutions is not uniform and considerable resistance seems to be built up in the tree against the absorption of some elements. Distribution in the tree is mostly vertical which necessitates a number of injections into the

trunk of each tree or into the base of each main limb. Since it appears that the same hole can be used for only a single injection, the extensive boring over a number of years would seriously weaken the tree. Under some circumstances borings may be eliminated and the injection made through a small cut branch.

The extent of the injury to the tissues from each salt has not been definitely proved, but probably only small amounts of solution can be safely used. Urea has given some promise as a means of increasing the nitrogen content of the tissues. Doses of one gram of the salt to one inch in limb circumference caused no injury.

These data indicate that the injection method cannot be commercially recommended yet except in cases where deficiencies of single elements such as iron have to be overcome. We have known for some time that iron induced chlorosis could be rectified by injecting dry salts or solutions into holes made in the trunks. Some reports indicate that absorption is more gradual when dry salts are used; therefore less injury is caused than when the feeding is done with solutions under gravity or pressure. However, the evidence on this point is hardly enough to be conclusive.

A recent report by Roach from the East Malling research station, Kent, seems to be a little more promising. Cox Orange Pippin apple trees were injected with a complete fertilizer solution containing 0.25 per cent potassium phosphate plus 0.25 per cent of Urea, least toxic of the nitrogenous carriers tried, at rates varying from one-thirtieth to one-sixth pound per tree. Sufficient quantities were absorbed in twenty-

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four hours to bring about considerable growth increase, equivalent to that from heavy soil applications.

Roach has also recently advocated the use of the injection method as a means of diagnosing mineral deficiencies. The practice may consist of injecting a single interveinal area of a leaf with the desired nutrient solution and then comparing an adjoining nontreated area with it. A special apparatus was devised for the operation, but it is possible that an ordinary hypodermic syringe could be used. Iron shortage was diagnosed in three days with the method employed. This method of mineral deficiency diagnosis may be extended to leafstalk injection and individual branch injection. Roach has also recently published a paper relative to "The Injection of Whole Trees." This paper gives details as to the injection method used and the results received. May it suffice to say that it shows considerable promise.

Conclusions.

This review of the modern methods of fertilization of shade trees, while far from complete, has attempted to present some of the favorable and adverse criticisms of the different methods employed. Besides the actual methods of application, certainly more attention should be given to an accurate method of figuring the quantity of fertilizer to be employed under widely varying conditions. While outside the realm of this article, may I comment on it briefly. For example, a tree which has its roots restricted by curbs, sidewalks or buildings cannot be fertilized so heavily as a tree growing under lawn conditions with an unrestricted root system. The extensiveness of the root system under different soil conditions will likewise influence the rate of application. Possibly with some study, a rate of application may be formulated, based on the diameter of the tree, the area available for application, the soil type and the root system of the tree in question. With such information at hand it should be possible more correctly to conduct the feeding of shade trees.

PLANT INTRODUCTIONS.

During the year ended June 30, 1936, more than 5,000 introductions of new and valuable economic and

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Date: Thursday, October 21, at 1 p. m.

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Bear in mind that Hemlocks are the best property in evergreens that a nurseryman can own, and there is going to be a great demand for them in the next few years, and no nurseryman will go wrong who has a large supply of them, and we assure you it will be profitable to attend this sale.

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ornamental plants showing promise of usefulness in this country were procured by the United States Department of Agriculture from foreign and domestic sources by means of explorations, purchase and exchange.

Many of these were related to special projects. There were approximately 1,000 introductions of grasses and forage plants for testing for the prevention of soil erosion, 655 of to-

bacco for use in breeding, and 703 more especially for the newly initiated vegetable-breeding program of the southeastern regional laboratory established under the provisions of the Bankhead-Jones act.

Material released and distributed to research workers and collaborators for testing in the form of plants, seeds, bud sticks, cuttings, roots and tubers amounted to 103,998 items.

Stone Fruit Improvement

Summarization of the Present Status of Systematic Breeding of Peaches, Plums, Cherries and Apricots

Grown in China thousands of years ago, the peach early spread throughout Europe and was brought to North America by the colonists, but commercial growing did not begin here until the nineteenth century, when orchards propagated from cuttings were first established, according to F. P. Cullinan in the 1937 yearbook of the United States Department of Agriculture. Between 1850 and 1900, peach growing became highly specialized, and to meet the need for types suited to different regions many varieties were developed by seedling selection, including such present stand-bys as Hale Early (1850), Belle and Elberta (1870), Crosby (1876), Champion (1880), Carman (1889), Rochester (1900).

Today, systematic breeding by hybridization is conducted by the Department of Agriculture and by the agricultural experiment stations in California, Illinois, Iowa, Maryland, Massachusetts, Michigan, New York, New Jersey, Texas and Virginia, as well as in Canada. Many of these have only started recently, but the Department of Agriculture has introduced four varieties (1935), New Jersey eighteen (1925-34), California one (1933), Iowa one (1932), Michigan one (1932), Canada six (1925-30). The extent of some of this work can be realized from the fact that the New Jersey station maintains 276 varieties of peaches and nectarines (a smooth-skin peach) on its breeding grounds for study and hybridization.

Objectives, of course, are different at different stations, depending on regional requirements and on the use for which the crop is intended. In general, there is still a need for a variety of high quality adapted to cold climates, and one that will not delay coming into leaf in climates where the winters are warm. Better varieties than Elberta, the best commercial peach so far, have been produced, but they are not so widely adapted. Promising hybridization work is now in progress with the Crawford type, which has high quality, and with the J. H. Hale. A good deal of interesting genetic work has been done with the peach, but there is need for more.

Of the many species of plums native to various parts of the world, four are especially important commercially in the United States: The European plums, brought over by the first colonists, large, attractive, green and golden yellow (Reine Claude) to red and dark purple (Italian prune); the damsons of the old world, yellow (Mirabelle) to blue (Shropshire), small, tart, used for preserves; the Japanese plums, introduced into this country in 1870, yellow overlaid with red (Kelsey, Burbank), excellent flavor, and the native American plums, especially the americana species (De Soto, Weaver), red to reddish orange, good quality, but having a thick, tough skin and clinging pit. These species are rich in varieties available as breeding material and there are also many other interesting species.

Several private breeders have done notable work with plums, including H. A. Terry and C. G. Patten, of Iowa, and J. W. Kerr, of Maryland, who were interested in the selection of native varieties; Luther Burbank, who selected and hybridized Japanese plums and other species; Millard W. Sharp and A. F. and August Etter, of California, who are now engaged in hybridizing.

Much systematic hybridizing, both among the plum species and between plums and other stone fruits (cherry, apricot), is being conducted by state stations in California, Iowa, Minnesota, New York and South Dakota and by federal field stations in Cali-

fornia and North Dakota. Where the work has been longest in progress, as in South Dakota, New York and Minnesota, several varieties have been introduced; elsewhere, promising material is still under test. The growing of plums has been declining in the United States during the past twenty years, and there is a great need for the breeding of varieties of really high quality adapted to regions characterized by extremes of heat or cold.

Cherries.

There are two species of cultivated cherries, the sweet and the sour. Sweet cherries are subdivided into two groups, heart or gean cherries, which are soft, tender and either dark-colored (Black Tartarian) or light (Coe), and bigarreaus, which are firm, crisp and either black (Windsor) or light (Napoleon). There are three groups of sour cherries, the amarels, light (Montmorency); the morellos, dark (English Morello), and the marascas, native to Jugoslavia, used for making maraschino cherries. Duke cherries (May Duke) are probably hybrids between sweet and sour species. Other species useful in breeding include the Nanking cherry of Asia, the sand cherry, the western sand cherry and the chokecherry of the United States, and the Mahaleb cherry of Europe and the pin cherry of North America, used as rootstocks.

Commercial production of sweet cherries is practically limited to the Pacific and intermountain states and that of sour cherries to regions along the Great lakes. The trees are too tender for colder regions; they do not thrive in hot dry regions, and in hot humid regions cherry diseases are disastrous. Breeding work is much concerned with overcoming these major

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handicaps and making this delicious fruit available over a much greater area and also over a longer season.

There has been little work by private breeders, though the development of black bigarreau varieties—Republican, Lambert and Bing—by the Lewelling brothers founded the cherry industry in the Pacific states. Among state stations, New York has taken the lead, introducing two new varieties so far. South Dakota has introduced several varieties and work is in progress at the Iowa and North Dakota stations, the federal field station at Mandan, N. D., and in Canada, where one new variety has been introduced. In addition, collections of breeding material are maintained in Ohio, Colorado, Utah, California and Oregon. In the search for necessary characteristics, native American wild cherries are being extensively used in some of this breeding work.

Apricots.

Apricots, probably native to China, are grown commercially only in Pacific coast states because the blooming habit of the trees makes them particularly susceptible to spring frosts in the colder regions. The species grown commercially is the common apricot, but several other species and subspecies are useful for breeding, including the black apricot, the Japanese apricot, the Russian apricot and the Manchurian apricot. The raw material used by breeders consists largely of older varieties from England (Blenheim, Moorpark), from France (Peach, Guillaens Early) and from the Union of Socialist Soviet Republics (Alexander, Budd) and newer American strains (Newcastle, Alameda). The chief objectives of breeders are to combine the good characteristics of these varieties and eliminate the faults and also to develop hardier types adapted to a wider territory. Apricots from northern Asia are particularly hardy, but there is need for still more material of this sort.

Among the wide crosses that have been made is that of the apricot with the plum, producing the so-called plumcot—though some cytologists do not consider this a true hybrid.

Systematic breeding with apricots is quite new. The United States Department of Agriculture began work at Palo Alto, Cal., in 1922, and about sixty promising hybrids are now being studied and tested. Work began in New York also in 1922, and so far

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| JAPANESE CHERRY, 4 to 5 ft. | 8.50 | 75.00 |
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| MAPLE, Norway, 8 to 10 ft. | 7.50 | 65.00 |
| MAPLE, Norway, 10 to 12 ft. | 9.00 | 80.00 |
| MAPLE, Norway, 2 to 2½-in. caliper..... | 18.00 | 165.00 |
| POPLAR, Lombardy, 6 to 8 ft. | 2.50 | 20.00 |
| POPLAR, Lombardy, 8 to 10 ft. | 3.00 | 25.00 |
| POPLAR, Lombardy, 10 to 12 ft. | 4.00 | 35.00 |

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one variety, Geneva, has been named. In 1924 the North Dakota and the South Dakota stations began breeding work; the latter station has been experimenting with material from Manchuria and Siberia.

SHELTERBELT TREES.

Of the various species of trees under the test in the northern great plains, the following maintained good stands

after several years of severe drought conditions: Siberian pea tree, green ash, Russian olive, American elm, Chinese elm, buckthorn, chokecherry, red cedar, blue spruce, Engelmann spruce, Douglas fir and ponderosa (western yellow) pine. From heavy to complete losses occurred in birch, poplar, willow, jack pine, Scotch pine, Black Hills spruce, white spruce, pin cherry, sumac, native plum, soft maple, mountain ash and larch species.

C. C. C. Develop Arboreta

Six Projects in Progress on State Lands Advanced by Government Aid

Civilian Conservation Corps enrollees are developing six living laboratories for the study of trees, shrubs and wild life on state lands in Wisconsin, California, New York, Florida, Ohio and Missouri.

These arboreta are located at the University of Wisconsin, Madison; University of California, Berkeley; Cornell University, Ithaca, N. Y.; Florida botanical gardens, near Sebring; John Bryan state park, in Ohio, and Lake of the Ozarks parkway, in Missouri.

In addition to providing study material for scientists and forestry experts, they will also serve as park areas to be enjoyed by many visitors.

The University of Wisconsin has the largest project of the six. Its arboretum now covers 840 acres, with an additional 480 acres held under option and a master plan calling for a total area of 1,600 acres, embracing the whole shore line of Lake Wingra. Development of the arboretum was undertaken by a C. C. C. camp in August, 1935. Trees and shrubs planted to date consist largely of white pine, spruce, red cedar, hard maple, ash, birch, red maple, blue beech, wild plum, hawthorn, wild crab, dogwood, sumac, hazel, wild rose and ninebark. During the past two years, Aldo Leopold, professor of game management at the university, has been coöperating with the C. C. C. in experiments on the seeding of annual and perennial plants for bird foods. Enrollees have created a series of pools in a lowland area to accommodate aquatic plants, water fowl and shore birds, and are developing experimental plots for the study of methods of prairie grass propagation.

The coöperation of the C. C. C. in developing the Cornell University arboretum has made possible the realization of a 40-year-old plan. This arboretum covers 502 acres and is arranged in the form of a giant horse-shoe to the east of the campus. Practically all of the work accomplished has been carried on by a single C. C. C. camp, working on the project since July 2, 1935. Professors and administrators of the university

plan the work, and a landscape architect draws detailed plans. All the major types of trees and shrubs which grow or can be established in the locality are to be planted. The arboretum is intended primarily for educational purposes, but it will be open to the public and will include foot and bridle trails, shelter houses and overlooks. Thus it will be a garden, a park and a wild life preserve.

The Florida botanical gardens and arboretum are located in Highlands county, near Sebring, on 640 acres immediately east of Highlands hammock state park. Here the C. C. C. has just started construction work. To date, principal plantings have been live oaks, laurel oaks and other evergreens as background in the botanical garden section. The principal purpose of this arboretum is to determine what species will be of economical value to central Florida. Experimental plots will be established to discover and group the woody plants that will or can be adapted to the soil and climatic conditions of that part of the state. An herbarium is also to be established. The location is excellent for scientific and educational purposes since it adjoins Highlands hammock state park. Each year botany students in large numbers in high schools and colleges of the southeastern states use this area.

The University of California ar-

boretum will cover 250 acres, but there has been little planting yet in the arboretum itself—possibly a total of 2,000 evergreens. Existing coniferous plantings, about 20 years old, were thinned and carefully checked for pests and diseases. Enrollees have repaired roads in order to make the arboretum accessible to fire-fighting equipment, built trails and fire breaks, and planted rhododendron varieties and perennials in the botanical garden portion of the area.

The John Bryan state park arboretum is located in the northwest corner of the park of that name, on the Little Miami river about two miles from the village of Yellow Springs, O. It is planned to cover 200 acres and will contain, when completed, specimens of all trees and shrubs native to the state of Ohio. The construction of this arboretum is entirely a C. C. C. job initiated at the request of the park authority. There are at least fifty-two universities, colleges and junior colleges within 225 miles of this area, which may use it for field trips and study.

The smallest project of the six is the Lake of the Ozarks parkway, in Missouri, which includes four acres of roadside planting. Enrollees are planting native shrubs and trees along the slopes bordering the highway, adding much beauty to the parkway and checking erosion on these slopes. They have, to date, set out some 21,000 plants on two acres of the tract. They include coralberry, sumac, hazel, dogwood, elm, redbud, sassafras, huckleberry, wild rose, plum, hawthorn, gooseberry, box elder and black haw.

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merce, has largely replaced gymnastics
among the 2,824 W. P. A. laborers
aiding the Department of Agricul-
ture in killing infected trees. Such
gymnastics were necessary when in-
fected trees were to be cut down, since
widespread limbs must be lopped
off before the trunk itself is chopped
through.

Eighty per cent of infected trees are
found in wooded rural areas. It is
in the destruction of these trees that
the new process has proved especially
valuable. In cities and towns, as well
as along main highways, infected elms
are still chopped down and burned.

Where the chemical is used, the
W. P. A. workers cut the bark and
lay a narrow strip back against the
trunk. Into the relatively small area
of sapwood thus exposed, copper sul-
phate is packed, after which the bark
is swung back in place, and a patch
of oilcloth applied. The chemical kills
the tree, usually in five or six days,
and with it the fungus and its carriers.

According to the report from Wil-
liam H. J. Ely, state W. P. A. ad-
ministrator, \$438,474 of the \$1,095,-
000 in W. P. A. funds allocated to
the department of agriculture in New
Jersey for this work has been expended
thus far. Altogether, 2,824 W. P. A.
workmen in New Jersey have been
assigned to the war on Dutch elm
disease.

BOTANICAL GARDENS.

The July issue of the Brooklyn
Botanic Garden Record, just received,
contains data on botanical gardens of
the world, which Dr. C. Stuart Gager,
director, compiled as materials for a
history, through sending out a ques-
tionnaire some time ago. The price of
this issue of the garden quarterly is
\$2, and as it contains over 200 pages,
the charge will seem quite justified. As
a record in conjunction with the com-
pilation by the arboretums committee
of the American Association of Nurs-
crymen of data on the botanical gar-
dens and arboretums of the United
States, it will have additional value to
those interested in these institutions.

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Rose Society Meets

*Annual Meeting of American Rose Society,
at Roanoke, Va., Featured by Splendid Show*

The twenty-ninth annual meeting of the American Rose Society was held in Roanoke, Va., October 7 and 8, with about 150 members present from states as far away as Utah. The members of the Roanoke Rose Society were hosts and furnished two full days of entertainment, including a splendid rose show.

In addition to roses from local gardens, there were several boxes of choice blooms brought by Treasurer S. S. Pennock from his Philadelphia store; local florists also staged displays. The Conard-Pyle Co. and Paramount Nurseries, West Grove, Pa., had large displays of novelties as well as standard varieties. J. F. Kafton, of the Cleveland Rose Society, Cleveland, O., staged a display of long-stemmed blooms from Cleveland gardens. One of the most interesting features of the show was a display of nearly fifty vases of sprays of rose hips from the garden of C. R. McGinnes, Reading, Pa. These colored berries not only made a fine exhibit, but were educational.

For the Friday meeting, James Clark, of Dreer's, Philadelphia, decorated the lobby of the hotel and the luncheon tables with great vases of the new rose, R. M. S. Queen Mary.

Awards Made.

On recommendation of the judges at Elizabeth park, Hartford, Conn., regional gold medal certificates were awarded to the hybrid tea roses, Crimson Glory and Mme. Cochet-Cochet, and to the polyantha Snowbank. A silver medal certificate was given to the hybrid tea Dorothy McGredy, and certificates of merit to the everblooming climber Summer Snow and the polyantha Topaz.

The American Rose Society's gold medal was awarded to Theodore Wirth for his rose work at Elizabeth park, Hartford, Conn., and Minneapolis, Minn. And a posthumous gold medal was awarded to the late Dr. J. H. Nicolas for his work with the rose.

The number of test gardens was reduced from sixteen to eight; those at Portland, Ore.; Hartford, Conn., and

Fort Worth, Tex., were retained, and five new ones were named.

The 1938 June meeting was planned to begin at Harrisburg, Pa., with a dedication of the new Harrisburg public rose garden, with visits to the Hershey garden, nurseries at West Grove, Pa.; Riverton and Rutherford, N. J., and ending at Elizabeth park, Hartford, Conn., where Mr. Wirth's gold medal will be presented to him in the garden he started many years ago.

It was decided to test the understocks being developed by Prof. T. J. Maney, of the Iowa State College, at the new test gardens at Ames, Ia., and the Virginia Polytechnic Institute, Blacksburg, Va.

New Officers.

At the meeting in the afternoon, the following officers were elected: President, Dr. T. Allen Kirk, Roanoke, Va.; vice-president, James H. Porter, Macon, Ga.; treasurer, S. S. Pennock, Philadelphia, and secretary, R. Marion Hatton, Harrisburg. Also named were the following trustees whose terms will expire in 1940: Forrest L. Heatt, San Diego, Cal.; Robert Pyle, West Grove, Pa.; C. R. McGinnes, Reading, and E. A. Piester, Hartford.

An appropriation was made to assist Dr. Blauvelt, of Cornell University, in his study of the rose midge, which has been highly destructive in gardens in a few sections during the past two or three years.

The secretary's report showed a membership of 3,062, an increase of eighty-six over last year.

After dinner at the Roanoke Country Club in the evening, Mrs. Frederick L. Keays gave a beautifully illustrated lecture on "Old Roses." Her slides of old roses collected principally from old gardens of the south were lovely, and her splendid talk awakened an interest in those almost forgotten roses.

At the meeting Friday morning, J. H. Porter, the vice-president-elect, told of the building up of the vast collection of roses at Macon, Ga., where at the present time more than 10,000 plants in 1,356 varieties are growing.

After luncheon, Prof. H. H. Hill, of Virginia Polytechnic Institute, spoke on soil reaction studies in the Roanoke test garden.

The rest of the day was spent in visits to the various gardens, and the evening was devoted to an experience meeting, various members discussing different subjects.

Saturday morning, about two dozen members who stayed over for the purpose visited the site of the proposed test garden at the Virginia Polytechnic Institute.

R. Marion Hatton, Sec'y.

ROSE UNDERSTOCK.

A form of *Rosa multiflora*, Chenault 5892, which was selected in earlier rose understock investigations by the United States Department of Agriculture, has now been tested by a number of the larger commercial rose nurseries. It is regarded with such favor that commercial supplies are being propagated. Plants of this selection come sufficiently true from seeds so that the seedlings possess the desirable characteristics of the original selection.

ANOTHER ROSE PATENT.

A plant patent was granted October 5, 1937, report Rummler, Rummler & Woodworth, patent lawyers of Chicago, on a rose described as follows:

No. 263. Rose. J. D. Brownell, Little Compton, R. I. The hardy hybrid *Rosa wichuriana* climbing rose plant, with hybrid tea type of bloom, characterized by its resistance to moderate sub-zero temperatures, in association with its China tea crossed with *Rosa wichuriana* fragrance, with form and color substantially as shown, with its notable opalescent or metallic luster, being nearly spectrum yellow in total color effect.

THE Zuend & Lohse Nursery Co., Dixon, Ill., has purchased several acres of land on the Lincoln highway west of Dixon, to be used as a display and sales ground.

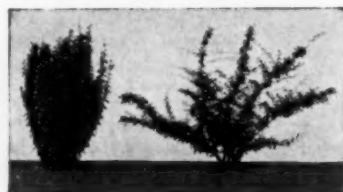
ADDITIONS are being made to the Wilcox & Sons Nursery, Laguna Beach, Cal., and when they are completed the establishment will be under the direction of Mrs. E. M. Handy.

THE Tuinstra Landscape Co. has removed its office and stock from 516 West Ninety-fifth street, Chicago, Ill., to 3700 West Ninety-fifth street, Evergreen Park, four miles west of the old location.

HOWARD EDRIIS recently purchased the field of nursery plants of the Thompson Floral Co., Sumner, Wash., and will close the stock out, operating from both his home site at Tacoma and the Wahl road site.

Truehedge Columnberry

Berberis Thunbergii Pluriflora Erecta



New Truehedge
Columnberry

Common
Barberry

Compare these 2-year-old plants

U.S. Patent
No. 110
Propagation
Rights
Reserved

THE PLANT SENSATION OF THE DECADE

The value of this wonder spire plant has been proven beyond a shadow of a doubt by the general acceptance of the trade. Over 600,000 plants being sold since introduction in the fall of 1934.

A rather limited supply is available for fall 1937. The established prices are as follows:

| SIZE | | WHOLESALE | | | RETAIL | | |
|------------|-------------|-----------|---------|----------|--------|--------|--------|
| | | Per 10 | Per 100 | Per 1000 | Each | Per 5 | Per 25 |
| 9 to 12 | inches..... | \$1.50 | \$12.00 | \$105.00 | \$0.30 | \$1.25 | \$5.00 |
| 12 to 15 | inches..... | 1.80 | 14.50 | 130.00 | .35 | 1.45 | 6.00 |
| 15 to 18 | inches..... | 2.25 | 18.50 | 165.00 | .45 | 1.75 | 7.50 |
| 1 1/2 to 2 | feet..... | 2.50 | 24.00 | 210.00 | .60 | 2.25 | 9.75 |
| 2 to 2 1/2 | feet..... | 3.50 | 36.00 | 270.00 | .75 | 2.75 | 12.50 |
| 2 1/2 to 3 | feet..... | 4.75 | 40.00 | 360.00 | .90 | 3.50 | 16.25 |

The large complete book depicting the "Ready-Made" hedge is available upon request. Purchases may be made direct from the Cole Nursery Co. or from the following licensed distributors:

| | | | |
|---------------------------------|--------------------------------------|----------------------------|----------------------|
| Adams Nursery, Inc..... | Springfield, Mass. | Lester C. Lovett..... | Little Silver, N. J. |
| Bay State Nursery..... | North Abington and Framingham, Mass. | Mount Arbor Nurseries..... | Shenandoah, Ia. |
| C. R. Burr & Co..... | Manchester, Conn. | Princeton Nurseries..... | Princeton, N. J. |
| Henry A. Dreer, Inc..... | Philadelphia, Pa. | Shenandoah Nurseries..... | Shenandoah, Ia. |
| Fairview Evergreen Nursery..... | Fairview, Pa. | E. D. Smith & Sons Co..... | Winona, Ont., Can. |
| Chas. Fiore Nurseries..... | Prairie View, Ill. | Storrs & Harrison Co..... | Painesville, O. |
| I. E. Ilgenfritz Sons Co..... | Monroe, Mich. | Wayside Gardens Co..... | Mentor, O. |
| Jackson & Perkins Co..... | Newark, N. Y. | | |

The COLE NURSERY COMPANY (Est. 1881) Painesville, Ohio

"Everything That's Good and Hardy"

WRITE for wholesale catalogue

20,000 **ELMS**, American, Vase,
Moline, up to 4 inches,
transplanted.

4,000 **MAPLE**, Norway, up to 2 1/2
inches, transplanted.

2,000 **WILLOW**, Thurlow, 8 to 10
ft. and 10 to 12 ft.

10,000 **SPIRÆA**, Vanhouttei, 3 to
4 ft. and 4 to 5 ft.

Send for list on many other items.

C. M. HOBBS & SONS, Inc.

Bridgeport, Indiana

Largest Nursery in Indiana. Established
1875.

1887 1937

OUR GOLDEN ANNIVERSARY

We offer for Fall 1937 and Spring 1938
our usual line of

**SHRUBS EVERGREENS
FOREST AND SHADE TREES
VINES AND CREEPERS
NATIVE PLANTS**

Write for Fall Trade List now ready

FOREST NURSERY CO., INC.

J. R. Boyd, Pres. McMinnville, Tenn.

Ampelopsis Veitchii Forcing Roses

Barberry Thunbergii

And Complete Line of Nursery Stock

C. R. BURR & COMPANY, Inc.

Dept. A—Manchester, Conn.

JEWELL Wholesale

Hardy Minnesota-grown
Nursery Stock and Liners

THE JEWELL NURSERY CO.

POUCH N

Lake City, Minnesota

WILLIS NURSERY Co.

Wholesale Nurserymen

Write for Catalogue

OTTAWA - - KANSAS

HILL'S EVERGREENS

Complete assortment of lining-out sizes
Also larger grades for landscaping
Send for our wholesale catalogue

D. HILL NURSERY CO.

EVERGREEN SPECIALISTS

Largest Growers in America

Box 402 DUNDEE, ILLINOIS

Canterbury Boxwood

Buxus suffruticosa and B. sempervirens.

Selected uniform plants; bushy and foliated to
center; masses of fibrous roots. Finished speci-
mens from 4 inches up, ready for quick shipment.
Prices lower, plants larger. Ask for special list.

CANTERBURY, Box A, Easton, Md.

VERHALEN'S THIRTY YEARS.

Thirty years have passed since S. J. Verhalen turned from peach orchard to nursery crops and laid the foundation of the big enterprise his sons, George and Ray Verhalen, operate at Scottsville, Tex., today. Some highlights of the achievements in the three decades were given in the Marshall News Messenger of September 26, published in the neighboring city of Marshall, Tex.

A total of 600 acres of nursery crops grow on the 3,000 acres. Of these, eighty acres are devoted to roses of 125 varieties, the output being about 750,000 bushes. Another important single crop is narcissus bulbs, about 8,000,000 of them, presumably one-tenth of the nation's supply of Paper Whites. Of the remaining nursery crops grown by the hundreds of thousands of plants, there are approximately 150 varieties. Three tractors and twenty mules are used. Employees number 125, and the nursery owns thirty homes for the families living on the premises. The annual payroll is given as \$50,000.

The enterprise started through S. J. Verhalen's love of plants, and when he began growing roses he could quote the American Rose Annual, catalogues and other books on the subject with amazing accuracy and completeness, indicating his close study of the subject he was taking up. His sons have inherited that love of plants and grow many new subjects sent by the bureau of plant introduction of the United States Department of Agriculture. Of seedling roses there are about 600 under observation and nearly that many evergreens under number. New varieties valuable enough for commerce are not frequently found, but the results are worth the effort. The observation and knowledge thus acquired have made the Verhalens among the best posted nurserymen on plants suitable for their region.

NEW JERSEY COURSE.

The New Jersey college of agriculture, Rutgers University, New Brunswick, will conduct a twelve weeks' course in nursery practice beginning November 1, for nurserymen desiring to keep informed on the most modern developments in their field, it is announced by Prof. Frank G. Helyar, director of resident instruction at the college.

Persons enrolling must furnish evidence that they have had enough experience to understand practical phases of the work, because of the technical nature of the course. Tuition is free to New Jersey residents.

Offered in the course are not only classroom lectures, but also laboratory work and an opportunity to study plant-growing methods in the college's greenhouses. Among the subjects to be covered are nursery management, plant propagation, plant materials, soils and sites, disease and insect control, horticultural machinery, fruit growing and lawn making and maintenance.

NATHAN HOLMAN, of the Holman Nurseries, Leavenworth, Kan., is building a new home near the nursery grounds.

THE Pioneer Nursery has been opened on U. S. highway 1, Cocoa, Fla., by R. L. Schlernitzauer, Rockledge, Fla. O. B. Goodson is superintendent.

TAXUS CUSPIDATA CAPITATA

(Upright Japanese Yew)

Our knowledge of the manifest qualities of this evergreen prompts us to transmit a share of the high regard we hold for it. Decidedly the best "all purpose" evergreen in our huge nursery, it ranks as "America's Public Evergreen No. 1."

An interesting deep green, holding good color throughout the entire year; contrasts beautifully in arrangement with other evergreens; dignified and lovely as a specimen; excellent in foundation planting; hardy; not particular as to location; dense, compact and practical as a hedge; adaptable to any desired shearing.

The fibrous roots of our Taxus are a result of frequent root pruning, insuring a hundred per cent earth ball, with almost perfect transplanting success. Sizes for all planting conditions. Quotations on request.

BOBBINK & ATKINS

Rutherford, New Jersey

HOOD NURSERIES

We offer for Fall 1937 and Spring 1938 complete line of Evergreens, Pink Flowering Dogwood, Azaleas, Deciduous Magnolias, Shrubbery, Shade Trees, Fruit Trees, etc.

Send us your list for quotations.

W. T. HOOD & CO., Inc., Richmond, Va.

Princeton Nurseries

of PRINCETON, N. J.

SUPERIOR

Hardy Ornamentals



EVERGREENS

For Seventy years growers
of Quality Evergreens
Lining-out Stock a Specialty

Write for Trade List

EVERGREEN NURSERY CO.

Established 1864 : STURGEON BAY, WIS.

LINING-OUT STOCK

Connecticut Valley Grown

Seedlings - Rooted Cuttings
Evergreen and Deciduous

Write for list

C. E. WILSON & CO., INC.

Manchester, Connecticut

PRIVET and BERBERIS

Splendid Stock

Write for Special Quotations

LESTER C. LOVETT

Milford

Delaware

STRAWBERRY PLANT STORAGE.

T. L. Aamodt, assistant state entomologist of Minnesota, has issued a brief report on fall digging and winter storage of strawberry plants as practiced by many of the larger nursery fruit growers in Minnesota.

Research work began in 1930, when 10,000 fall-dug plants were stored. Some of them were in bunches of twenty-five or fifty, while others were laid on the ground on the cellar floor. The roots of some were mudded; others were covered with layers of straw and shingle tow at depths varying from three to twelve inches. The temperature of the cellar varied from 20 to 40 degrees Fahrenheit. Above 30 degrees there is danger of too much growth. Mr. Aamodt reports. After being planted in the spring, ninety-five per cent of the plants were in perfect condition, while the outdoor plants treated in the usual manner showed a mortality of forty-five per cent due to winter injury. Later experiments have shown similar results.

The advantages obtained by the practice are important. Nurserymen can receive orders at any time and be certain of having perfect material to fill the orders. Also, losses in yields are decreased by winter storage. Among the more important disadvantages are the variability of fall freezing dates and the uncertainty about what varieties are preferred in states where northern-grown stock is wanted. It is also admitted that spring-dug plants, having had an extra period of root development in the fall, have a better appearance, but as the crown and roots are the most important features, the foliage appearance is not of so much consequence.

Several of the larger growers are going ahead with the newer practice, claiming that, all in all, stored plants have a distinct advantage.

HELP WANTED

Reliable single man, experienced in nursery, greenhouse, propagating and landscaping. Must be able to handle men, meet public and be American citizen.

Address No. 73, c/o American Nurseryman, 508 S. Dearborn St., Chicago, Ill.

HELP WANTED

Foreman to run 200-acre nursery, thirty miles north of Chicago. House furnished. Address No. 72, c/o American Nurseryman, 508 S. Dearborn St., Chicago, Ill.

FOR SALE

Due to old age, we have decided to retire from all business and to sell our nurseries. They contain up to 60 acres of good land, 30 acres planted to fruit trees, 20 acres to small fruit plants, all buildings nearly new and in good condition, city conveniences, and modern in every way. Immediate possession if wanted. More information if interested. Best to come and see the place. Location 75 miles from Chicago, Ill., on U. S. 12, Michigan.

L. J. Rambo's Wholesale Nurseries, Bridgman, Mich.

FOR SALE

Well established nursery doing good business, 46 miles from New York, route 22. Will sell because of poor health; splendid opportunity; worth investigating. For further particulars, address S. S. Box 449, Katonah, N. Y.

OPENS DULUTH NURSERY.

A general retail nursery has been opened in Duluth, Minn., by John S. Kapuscinski under the name of Kapp's Duluth Nursery. The present stock was started from seeds and liners in 1928. Mr. Kapuscinski was formerly supervisor of purchases in the relief administrations for Wisconsin and Minnesota. For the last two years he has been a company commander in the Civilian Conservation Corps, having a commission as a lieutenant junior grade in the United States naval reserves. Duluth daily and Sunday papers have given him generous publicity.

WITH Roy S. Woodruff as host, open house was held at Woodruff's Nursery, Eugene, Ore., September 19.

Low bid for seeding and planting the ground of the post office and courthouse at Galveston, Tex., was submitted by the Derrick Nursery Co., Waco, Tex.

A NEW addition to their main seed house is being built by W. N. Scarff's Sons, New Carlisle, O. It will be a 2-story building with storage and drying space, equipped with a new drier.

THE Georgia Horticultural Society will hold its sixty-second annual convention October 12 at Experiment, Ga., in the offices of the Georgia experiment station. The president is C. T. Smith, head of the Concord Nurseries, Concord, Ga.

TROY'S NURSERIES, INC., New Rochelle, N. Y., was awarded a gold medal for landscaping the entrance to the Armory at Greenwich, Conn., where the twenty-sixth annual flower show of the Westchester and Fairfield Horticultural Society was held September 28 and 29. Lewis & Valentine, Inc., Rye, N. Y., won a silver medal, as did Edwin T. Wyatt, Valhalla, N. Y. The bronze medal for commercial displays went to the Sunridge Nurseries, Greenwich, Conn. James McDonald, William Jameson and Robert Whitton were the judges.

CLASSIFIED ADVERTISING

Peonies: Tree and Herbaceous, best varieties. Oberlin Peony Gardens, Sinking Springs, Pa.

Hemlock, Scotch Pine, 3 to 12 ft. high. White Spruce, Austrian Pine, Jack Pine, Oak, Honey Locust. Elmgrove Nursery, Leesville, Mich.

Peonies, Irises, Poppies, Hemerocallis, you save at least 20 per cent, as I must move from leased ground. Send me your want list. Thimlar Nurseries, Fort Wayne, Ind.

Amoor River Privet, bushy, good roots. Cut back this spring. 3 to 15 canes. Excellent plants for landscaping.

Write for samples and carlot prices. Wm. H. Mast, Davenport Nursery, Davenport, Ia.

Peach Seed, 200 bus. screened, natural; average 7200 to the bu. 150 bus. country run, average 6200. 100 bus. large seeds, average 4500 to bu. Immediate shipment. Tennessee Nursery Co., Box 1, Cleveland, Tenn.

Rhododendrons, Maximum and Catawbiense; Mountain Laurel, Cedar, Hemlock, Leucothoe, Flame Azaleas, Holly, Dogwood, Sourwood, Maples; also cut Holly with berries, cut Evergreens, Galax, Ferns. Price list free. James Brewer, Butler, Tenn.

Hardy Chrysanthemums, Pink Cushion, strong field plants, \$10.00 per 100. Red Cushion, White Cushion, Bronze Cushion, strong 2 1/2-in. pots, \$8.00 per 100. Order at once. Stock limited. Not less than 25 of a variety, not less than 50 plants to an order. Stock unconditionally guaranteed.

Wonderland Nurseries, Ellersson, Va.

Peony Officinalis, early-flowering. 3 to 5 eyes, plus roots. Per 10 Per 100 Mutabilis, flesh to pure white... \$5.00 \$40.00 Rosea, single bright pink... 3.50 25.00 Roseo-pl., double bright pink... 3.50 25.00 Roseo-superba, double salmon... 5.00 40.00 Rubro-pl., double bright scarlet... 3.50 25.00 5 per cent discount for cash. Ask for our complete catalogue of perennials. Weller Nurseries Co., Inc., Holland, Mich.

AMERICAN NURSERYMAN**PEACH TREES****Thrifty June-budded Stock**

We offer to the trade an up-to-date list of the leading varieties to select from. All of these trees are grown on our farms in Maryland. They have shaped up nicely and have a well balanced fibrous root system—the kind of stock that will please you and your customers.

We invite your inquiry and offer special prices on early fall bookings.

E. W. Townsend Sons Nurseries
Wholesale Dept.
Salisbury, Maryland

TAXUS CUSPIDATA CAPITATA

(Upright Japanese Yew)

6 to 9 ft. high, spaced 6 and 8 ft. apart. Perfect, compact, extra-heavy specimens. Roots very fibrous. Dig with perfect balls.

Quotations on any quantity.

PEEKSKILL NURSERY
Peekskill, N. Y.

AMERICAN ELM

2000 from 1 to 3 1/2-in.

Write for prices.

* Must move them this fall.

WAYSIDE NURSERIES

Sta. F. R. 9 Milwaukee, Wis.

DOUGLAS FIR SEEDLINGS

\$22.50 per 1000; \$200.00 per 10,000
\$1750.00 per 100,000

Finest quality from northern Colorado and Wyoming seed.

A complete stock of lining-out evergreens and shrubs. Preliminary list mailed on request.

SCOTCH GROVE NURSERY, Scotch Grove, Iowa

Peach Seed and Peach Trees

Write for prices. Large acreage of nursery stock. Will appreciate your want list.

SOUTHERN NURSERY CO.
Winchester, Tenn.

PEACH PITS

Our Pits Compare Favorably
With the Best

HOGANSVILLE NURSERIES
HOGANSVILLE, GEORGIA

PEACH PITS

THE
Howard-
Hickory
Company

Hickory, N. C.

UNITED NURSERIES

539 Southfield Avenue
Pawtucket, R. I.

| | Each |
|---|--------|
| NORWAY SPRUCE, 3 to 4 ft. | \$0.50 |
| 4 to 5 ft. | .60 |
| CAROLINA HEMLOCK, 2 to 3 ft. | 1.00 |
| Heavy sheared specimens, | |
| 3 to 4 ft. | 1.75 |
| 4 to 5 ft. | 2.50 |
| NORWAY MAPLES, 1 1/2-in. cal. | 1.00 |
| 1 1/2 to 2-in. cal. | 1.50 |
| 2 to 3-in. cal. | 2.00 |
| SIBERIAN ELMS, 1 1/2 to 2-in. cal. | .75 |
| 2 to 3-in. cal. | 1.00 |
| TAXUS CAPITATA, 1 to 3 ft. | 1.00 |
| 2 to 3 ft. | 1.75 |
| 3 to 3 1/2 ft. | 3.00 |

APPLE TREES

We offer to the trade an extra-fine lot of 1-year Apple Trees; all grown from Whole Root Grafts. A complete list to select from. This stock is unusually vigorous and strong. Your customers will like these trees.

Send us your list of requirements for special fall booking prices.

E. W. Townsend Sons Nurseries
Wholesale Dept.
Salisbury, Maryland

Taxus media Hatfieldii
XX, bushy, 8 to 12 ins., 25c
XX, bushy, 12 to 18 ins., 35c
Clethra alnifolia, transplanted
Bushy, 18 to 24 ins., 15c
Viburnum Opulus, 12 to 18 ins., 5c
Viburnum dentatum, 18 to 24 ins., 5c

VAN DER VOET NURSERIES
Taunton, Mass.

Magnolia Grandiflora Seed

From this year's crop (not cleaned).
\$1.00 per lb. **NANDINA** seed (berries),
fresh crop, \$1.00 per lb. **CHERRY**
LAUREL seed (berries), fresh crop, 25c
per lb.

Fruitland Nurseries Augusta, Ga.

STOCK YOU WILL NEED

Cotoneaster Acutifolia, 15 to 24 ins.; 2 to 3 ft.
Cornus paniculata, 18 to 24 ins.; 2 to 3 ft.
Cornus Sibirica, 2 to 3 ft.; 3 to 4 ft.
Rosa Setigera, 18 to 24 ins.; 3 to 4 ft.
Rosa Blanda, 18 to 24 ins.
Ribes Alpinum, 15 to 18 ins.; 18 to 24 ins.
Rhus Canadensis, 18 to 24 ins.; 2 to 3 ft.
Bellea Poplars, 5 to 6 ft.; 6 to 8 ft.

Ask for quotations
ESCHRICH'S NURSERY, Sta. F., Milwaukee, Wis.

LINERS, extra nice

Berberis, **Calycanthus**, **Cornus**, **Crataegus Cordata**,
Fraxinus, **Malus Coronaria**, **Chinese Elm**, **Multi-**
flora Rose Stock, the nicest block of Multiflora
in the country. How many do you want and what
size? A good many other items in quantity. Send
for bargain list, now.

ATLANTIC NURSERIES, Inc., BERLIN, MD.

We offer for fall season 1937, best
block of **Sugar Maples** we have ever
grown, 1 to 1 1/2-inch caliper.

Populus Simonii, 6 to 8 to 12 to 14 ft.
Thuja Occidentalis, specimens, 5 to 7 ft.
Grafted Wisteria Chinensis, 2 to 6 years.

Write for prices and quantities.

Walter E. Campbell, Horticulturist
Greensboro, N. C.

OBITUARY.

E. M. Crawford.

E. M. Crawford, of the Crawford Nurseries, Concord, Ga., died at Atlanta, Ga., September 26. He was on a business trip with his son, Robert C. Crawford, when seized with a heart attack in an Atlanta restaurant. Although taken immediately to a hospital, he was pronounced dead on arrival.

Mrs. Annie Banks Crawford, his widow; three sons, Robert C., Rodger E. and Claude B. Crawford, all of Concord; a daughter, Mrs. Mary E. Davis, Augusta, and six grandchildren are the survivors. Mr. Crawford was buried in the Concord Christian church cemetery September 28.

Frederick L. Kanst.

Frederick L. Kanst died October 11 at his home in Chicago. He was 89 years of age. He had been a pioneer in park landscaping, achieving fame as chief horticulturist at the Columbian exposition at Chicago in 1893.

Mr. Kanst was born in Germany and brought to America by his parents when he was 12. He was employed by the south park board of Chicago in 1873, three years after it was established, serving as chief gardener until his retirement in 1921. He was credited as one of the first to create designs with growing plants and was famous for a large floral picture of President Grant planted in Grant park, at his death in 1885. Under his supervision most of the trees in Washington, Jackson and Grant parks were planted.

The deceased is survived by two sons, E. A. Kanst and Frederick, Jr., and a daughter, Mrs. James Gurney, Jr., of St. Louis, Mo. Funeral services were held October 13, with interment in Oak Woods cemetery.

Dr. Jean H. Nicolas.

Funeral services for Dr. Jean H. Nicolas, whose obituary appeared in the American Nurseryman of October 1, were held September 27, at his late home in Newark, N. Y. By his own request, the body was cremated and the ashes were laid in the rose gardens of the Jackson & Perkins Co., where for the past nine years he had been in charge of research work. His widow, a daughter, a brother and three sisters survive.

Honorary pallbearers were: Leonard Barron, president, American Rose Society, New York; Dr. T. A. Kirk, vice-president, American Rose Society, Roanoke, Va.; R. Marion Hatton, secretary, American Rose Society, Harrisburg, Pa.; A. F. Watkins, Tyler, Tex.; L. C. Bobbink, Rutherford, N. J.; H. Vandergraatz, West Grove, Pa.; Dr. A. R. Taylor, Clifton Springs; W. O. Engel, president, Rochester Rose Society, Rochester; Peter G. Enser, president, Niagara Frontier Rose Society, Buffalo; Charles H. Totty, past president, American Rose Society, Madison, N. J.; William Bringman, Roanoke Rose Society, Roanoke, Va.; Paul C. Zaenglein, Rochester, and Charles H. Perkins and Paul V. Fortmiller, of the Jackson & Perkins Co., Newark.

THE Mossholder Nurseries, 1415 East Valley boulevard, El Monte, Cal., recently announced their formal opening. A landscape department is maintained.

VASE ELM

| | Per 100 | Per 1000 |
|---------------------------|----------|-----------|
| 500 1 1/2 to 2 -in. | \$125.00 | \$1100.00 |
| 2000 2 to 2 1/2 -in. | 175.00 | 1500.00 |
| 1200 2 1/2 to 3 -in. | 200.00 | 1750.00 |
| 500 3 to 3 1/2 -in. | 275.00 | |

MOLINE ELM

| | | |
|--------------------------|--------|-------|
| 200 1 1/2 to 2 -in. | 125.00 | |
| 200 2 to 2 1/2 -in. | 175.00 | |
| 500 2 1/2 to 3 -in. | 200.00 | |
| 500 3 to 3 1/2 -in. | 275.00 | |

SCHWEDLER MAPLE

| | | |
|--------------------------|--------|-------|
| 800 2 1/2 to 3 -in. | 275.00 | |
| 250 3 to 3 1/2 -in. | 350.00 | |

AMERICAN ELM

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10 **Bleeding Hearts**, 20 beautiful **Blackmore & Langdon Delphinium** seedlings, from imported stock; 20 double hybrid **Painted Daisy** seedlings; 20 **Tenuifolium** **Lilies**; 10 **Boxwood**; 20 different **Iris**es, labeled; 4 **Mead's hybrid Amaryllis**; 100 mixed **Glaadiolus** bulbs; 20 **Parma Violets**; 20 **Confederate Violets**.

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Write for Catalogue

Weathered Oak Herb Farm, Inc.
BRADLEY HILLS, BETHESDA, MARYLAND

CATALOGUES RECEIVED.

[In writing for a copy of any of the catalogues reviewed below, please mention that you saw it described in The American Nurseryman.]

Willis Nursery Co., Ottawa, Kan.—A 36-page wholesale price list of general nursery stock. Besides trees, shrubs and vines, there are offers of perennials, bulbs and nursery supplies, forest and fruit tree seedlings and tree and shrub seeds. A novelty, *Lonicera Heckrottii* Goldflame, is featured on an insert.

Mount Arbor Nurseries, Shenandoah, Ia.—Fall wholesale list, dated September 29, a comprehensive catalogue of general nursery stock, featuring a number of specialty items and including a substantial perennial section, also marked by many novelties. Spring and fall bulbs complete the list. Particular mention is made of fruit tree stocks and of the firm's packaged nursery stock.

Columbia Nursery Co., Portland, Ore.—General catalogue of fruit, nut and ornamental nursery stock especially adapted to the Pacific northwest. A separate condensed planting guide of alberta, walnuts and chestnuts contains interesting data both on culture and varieties.

Le-Mac Nurseries, Hampton, Va.—Wholesale price list for fall, covering azaleas and other broad-leaved evergreens and including lining-out grades. Valuable descriptive notes are given.

Chase Nursery Co., Chase, Ala.—A kraft-covered catalogue of eighty-four pages, listing wholesale offers of a large selection of nursery stock. Views of the nursery illustrate the pages. Mention is made of the advantages of the location for growing stock and of the facilities of the firm for handling orders. A large section of the catalogue is given to nurserymen's supplies.

T. Sakata & Co., Yokohama, Japan.—Catalogue of this firm's seeds for the nursery handled by Herbert Brock, New York. Tree and perennial plants are represented. Seven pages are devoted to specialties, and two pages are given to cultural notes.

Smith's Gardens, Clarkston, Wash.—A mimeographed list, priced retail, of fall planting materials, including bulbs, perennials and nursery items. Prices are listed extensively.

Myron D. Bigger, Topeka, Kan.—Mimeographed listing of about 200 perennials.

E. D. Robinson, Wallingford, Conn.—Wholesale catalogue of choice nursery stock offered by this sales agent for five well known eastern nurseries. The prices are for immediate acceptance. Throughout the list there are many novelties. Perennials, herbs and lining-out evergreens supplement the usual nursery ornamentals.

Atlantic Nurseries, Inc., Berlin, Md.—Trade list of choice young nursery-grown ornamental trees, vines and bulbs for lining out.

Kiyono Nurseries, Crichton, Ala.—Wholesale price list of azaleas, camellias and other broad-leaved evergreens, a few deciduous items and a few palm, vine and bulb items. The catalogue shows camellia types, and there are copious descriptive notes on varieties.

Chandler Landscape & Floral Co., Kansas City, Mo.—Price list, issued in neatly prepared mimeographed form, covering trees, shrubs, perennials and evergreens. A fifty per cent discount from the prices given is allowed to the trade, according to a notation on the cover.

M. Leenders & Co., Steyl-Tegelen, Holland.—Circular listing four new roses for 1937 and several others introduced in the last two years.

Fred C. Gloeckner & Co., New York, N. Y.—Promotional circular telling the possibilities that lie in camellia growing and describing the merits of Longview camellias.

Fruitland Nurseries, Augusta, Ga.—Annual catalogue in which is listed much of the plant material suitable for the "deep south." Among the flowering shrubs, azaleas and camellias are leaders. Roses are well represented, and fruit items are given several pages. It is the firm's eightieth year in business.

M. Herb, Naples, Italy.—An illustrated catalogue of this seed specialist's own introductions, among which are flowers, vegetables and ornamental gourds and peppers.

Germain's Seed & Plant Co., Los Angeles, Cal.—Retail catalogue of bulbs for autumn planting, with sixteen pages of bulb, seed and rose offers and a cover printed in colors.

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The Ariens Co., Brillion, Wis., manufacturer of the Ariens tillers, has completed a new factory which will double its previous manufacturing capacity. It is steel, concrete and glass construction throughout. It is a modern building with new machinery and equipment installed to take care of the increased business from market gardeners, nurserymen, seedsmen, florists, etc. The factory extends from the street to the C. & N. W. railroad tracks in the rear, where a loading platform facilitates shipments by rail.

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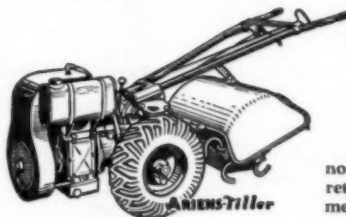
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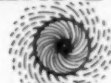


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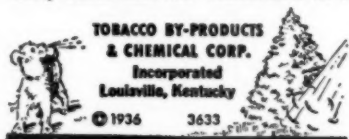
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